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Fishermen, Dealers and the Auction System: A Case Study of Rabo De Peixe, Sao Miguel, Azores

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FISHERMEN, DEALERS AND THE AUCTION SYSTEM: A CASE STUDY OF RABO DE PEIXE, SÃO MIGUEL, AZORES

By

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ABSTRACT

This thesis presents an examination of the fish auction system in the Azores and three New England ports; Boston, New Bedford and Portland. On the island of São Miguel, the village of Rabo de Peixe was selected as a case study where a survey of local fishermen and dealers was conducted. Data obtained through interviews provided some insights into the socio-economic status of local fishermen and how they perceive infrastructure improvements, government support and changes in the auction system. Most importantly, an attempt is made in this study to compare the organizational and administrative aspects of U.S. auction systems in order to identify those aspects that can be transferred to improve the fish marketing system in the Azores. The author feels that the suggestions made are realistic and technically feasible and, if implemented, will upgrade the efficiency and organization of the local auction system in the islands. It is further assumed that technology transfer between the democratic government of the United States and the social democratic regime of Portugal do not present any inherent problems.

ACKNOWLEDGEMENTS

This thesis is dedicated to all the fishermen in Rabo de Peixe. I wish to express special thanks to Dr. Gerald Krausse for his patience, advice and for accompanying me to the Azores for the purpose of assisting me in my field research. My gratitude also extends to the Secretary of Fisheries of the Azores, Dr. Adolfo Lima; former Secretary of Fisheries Eng. Ezequiel Moreira da Silva; Mr. Artur Martins, Deputado À Assembleia Regional dos Açores; Eng. Hermano Motta, Mayor of Ribeira Grande; Mr. Sirílio Pacheco, President of the Junta of Freguesia of Rabo de Peixe, and all government agencies that provided valuable information for the writing of this thesis. I would also like to express my thanks to Dr. Andreas Holmsen not only for serving on my committee, but also for his valuable suggestions regarding the auction systems in New England. Furthermore, I am grateful to Dr. Lewis Alexander and Dr. John Gates for taking the time to comment on the draft and serve on the thesis committee. My thanks also go to Dr. Bruce Marti for helping me with the computer analysis of the data. Most importantly, I would also like to express my gratitude to my wife Marta and my three children, Natasha, Miguel and Nicole for the time they had to be without me. Finally, many thanks are extended to my typist Denise Abeel who was always ready without notice.

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CHAPTER I

INTRODUCTION

This thesis evaluates the auction system in the Azores and compares certain operational characteristics with auctions in New England ports, namely New Bedford, Boston and Portland, Maine. In addition, selected socioeconomic characteristics of small scale fishermen and their perception toward government involvement in the fishery are examined. The information utilized in this study was derived from interviews with local fishermen from the Port of Rabo de Peixe on the Island of São Miguel and government documents obtained from the Agriculture and Fisheries Department.

The analysis begins with an overview (Chapter II) of the fishing industry in the island archipelago in order to provide a perspective on the contribution this sector makes to the islands' economy. The artisanal, commercial and recreational fishing activities are briefly examined.

The most significant contribution of this thesis is made in Chapter III which addresses the auction system. A comparative approach is applied to various auction systems in New England in order to identify the characteristics which can be transferred to the Azorean case. Chapter IV focuses on the artisanal fishermen and their experience, education and attitude toward changes in the fishing sector and the auction system. The conclusions consists

primarily of recommendations designed to alleviate problems and issues discussed throughout the study.

Nature of the Problem

Fishermen in the Azores should play a more active role in the changing patterns of the auction system and other aspects of the small scale fishing industry. Due to their long term experience, fishermen should be included in the process of improving their daily operations. This study hopes to generate data that might reveal the current role fishermen play in bringing about change in the auction and port activities.

The auction system practiced in the Azores is unique in the sense that the fish dealer controls the price of the fish harvested. Since there is no refrigeration facility in most ports, the fishermen have no choice, aside from selling the catch at any price, on a daily basis. The oscillation in prices is so great that speculation as well as selling the catch for bottom prices occurs frequently. There are no adequate mechanisms to regulate prices at an auction. Unfortunately, fishermen lack the education and means to form an organized system that would protect auction prices. This problem can only be resolved by the government, which would have to create legislation to establish a minimum price. Dealers can buy fish at different ports for different prices and sell it to the public for the highest prices of that day. The lack of government inspectors and the rudimentary auction management contribute to this type of inadequacy. Also, the fact that each vessel is auctioned off one at a time, contributes to a large fluctuation in prices. In order for a fair price system to

exist, the catch from all vessels should be auctioned at the same time, therefore contributing to a more uniformed price throughout the auction period. Another cause for the changes in prices is the fact that the auction is open virtually all day. If fishermen had to register their vessels within a specific time, and the auction only functioned once a day with a set schedule, price differences would be much lower. It is these kinds of problems that have prompted this study and on the basis of its findings specific suggestions are made to improve the functions of the auction system.

Study Area and Data

The Azorean Archipelago is a geographically isolated group of nine islands in the North Atlantic, 1,600 kilometers west of Portugal and 4000 kilometers from the United States. Politically, the islands are autonomous, but in terms of legal and defense issues, they are under Portuguese authority. The largest island is São Miguel which has approximately 60 percent of the total Azorean population and receives 48 percent of all fish landings in the region. On the northern shores of São Miguel, the village of Rabo de Peixe[1], is the most important artisanal fishing port where more than half of the population depends on fishing for their livelihood. According to 1988 statistics, some 70 fishing vessels and 400 registered fishermen operate out of Rabo de Peixe. It is due to these characteristics that Rabo de Peixe was chosen as the case study for this research project (Figure 1).

The data used in this study was obtained from libraries, government documents and field investigations. Official statistics on fisheries were gathered

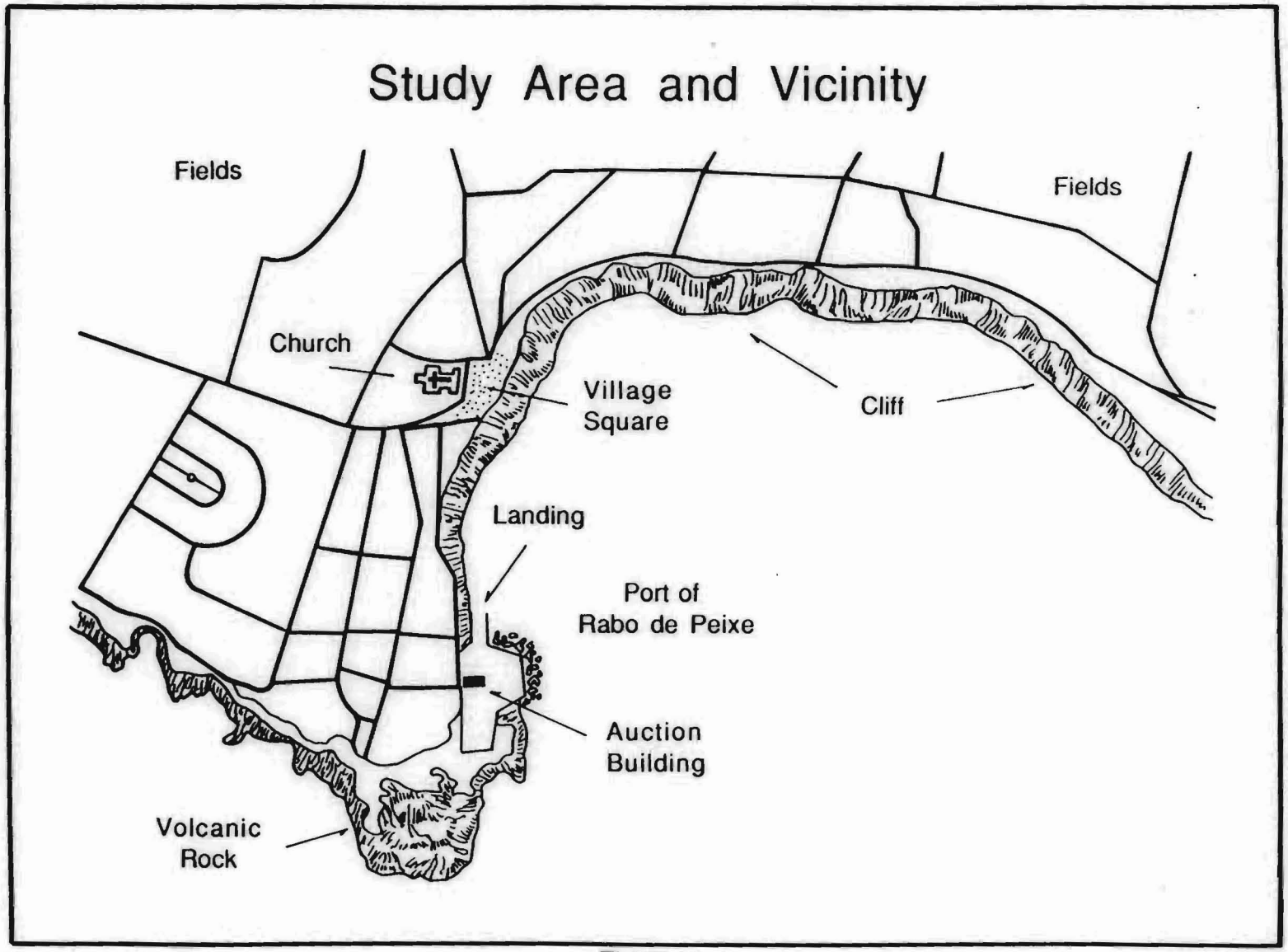
Study Area and Vicinity
Fields
Fields
Church
Village
Square
Cliff
Landing
Port of
Rabo de Peixe
Auction
Building
Volcanic
Rock

Figure 1

from Lotaçor, (the auction authority) the Regional Secretary of Agriculture and Fisheries, the Regional Director of Education for the Azores (D.R.E.P.A.) and the Junta of Freguesia of Rabo de Peixe (the village administration). Special interviews were conducted with the current Secretary of Fisheries Dr. Adolfo Lima; the former Secretary of Fisheries Engo Ezequiel Moreira da Silva; Deputado À Assembleia Regional Mr. Artur Martins, Mayor of Ribeira Grande Engo Hermano Motta and Mr. Fernando Lima, Director of Lotaçor. At the port of Rabo de Peixe, two auction officials were interviewed regarding the operations of the auction system. At the Portland Fish Auction, the General Manager, Mr. Dennis Frappier, was contacted for an extensive interview to learn more about the nature of a modernized auction in New England.

A survey was conducted in Rabo de Peixe during the summer of 1987 and 1988. One hundred randomly selected fishermen and fifteen dealers were interviewed during a five-week period in August. Every other individual fisherman was contacted as he entered the auction house or returned from a fishing trip. This procedure was the only possible way to ensure that a cross section of respondents could be interviewed in what otherwise is a busy, unorganized environment filled with human activity. It was essential that the sample population consisted of individuals with a variety of fishing experience, age and education. This sample represents approximately twenty-five percent of the registered fishermen in the village. The questionnaire for fishermen included questions on marital status, age, family size, years of education, fishing experience and aspects about their fishing activities. Respondents were also asked to rank items concerning government subsidies, port improvements and

changes in the auction system. The questionnaire for dealers addressed problems related to fish handling, years of education, experience and their relationship with fishermen. A sample questionnaire for the fishermen and dealers is included in Appendix A and B.

Methodology

Data acquisition for this study consisted of both library and field research. Existing literature has been gathered during several visits to the Archipelago in the past three years. Being in direct contact since that time with government officials and the University of the Azores (Terçeira Campus) the author has made extensive use of their library and relevant government documents. Whenever possible, the journal literature has also been incorporated into the study.

Field research was conducted through interviews with randomly selected respondants at the port. A preliminary questionnaire was tested on some 20 fishermen to make sure the questions asked were clear, addressed the issues, or needed to be changed. Any additions or deletions were incorporated into the new questionnaire which was then used on the survey population.

Once the data was collected it was tabulated and entered into the computer. The interpretation was carried out using the Statistical Analysis System (SAS) to sort out certain variables. SAS is capable of analyzing quantitative data, frequency and percentage share tabulation.

Review of the Literature

This study relied upon a body of literature made up of journal articles, government documents and theses produced by the Department of Marine Affairs of the University of Rhode Island. Their general content and contribution to this project will be summarized below.

Several theses specifically address the auction pricing system and marketing of fish (Vincent, 1981, Sackton, 1985, McGiveney, 1973). Vincent looks at the current selling practice of middlemen, cooperatives and auction systems. The study also attempted to determine whether fish auctions would improve the market position of commercial fishermen. Of particular interest to this project is the discussion which deals with the auctions on the price and fish quality. Sackton describes a program where a fishing vessel was employed in an innovative fish handling technique to improve the quality of fish aboard. The project demonstrated that New England fishermen can produce the same quality of fish produced anywhere else in the world. McGiveney investigated the economic conditions of the seafood retail market in Rhode Island. Despite the seasonal nature and fluctuation in the supply, the business climate appears to be stable and profitable in the fresh fish market. Other theses written by Marine Affairs students cover such topics as cooperatives in the developing countries and the standard of living of small-scale fishermen.

A significant body of information was obtained from government publications. The Azorean Regional Secretary of Agriculture and Fisheries has sponsored a fisheries conference for the past ten years where a series of scientific papers on fish population dynamics, fisheries management and

international fisheries research have been presented. Some of these papers have been valuable background information for this thesis. Scientific data on stock assessments, species captured and locations of tuna were covered by articles written by a biologist of the University of the Azores, Dr. João Pereira (1985). Other papers on the potentials of the Azorean EEZ and research of the Azorean fisheries: present and future, were presented at the 7th Fisheries Week by Professor José Avila Martins (1988).

Much of the statistical data on local fish landings were obtained from Lotaçor, the primary agency which collected annual fisheries statistics from the auctions by ports, islands, species, value and weight. Another governmental agency, the Regional Secretary of Commerce and Industry in the Azores, provided trend analysis and production patterns of marine resources in the Azores and showed their relationship to other areas. The Ministry of Fisheries in Portugal has published reports on the development and modernization of the fishing industry. (Taveira, 1975)

A series of individual studies were used as background information. Goulart (1989) in his dissertation analyzes the abundance of tuna stocks for the Azorean waters by applying four different models for determining their movement. Several journal articles describe the growing recreational fishery in the Azores (Hansen, 1986 and Andersen, 1987). Other publications such as the Commercial Fisheries News and the National Fishermen were instrumental in providing up-to-date information on the New England auction systems and market conditions.

While the literature research provided useful data and was a necessary

component of this project, no publication as far as is known has specifically addressed the auctions and the conditions of fishermen in the Azores. Hence, it was necessary to generate primary data in the field as to assess the problems in the fishery as they persist today in the islands.

CHAPTER II

THE MARINE ECONOMY OF THE AZORES: AN OVERVIEW

Introduction

This chapter presents a general description of the marine economy of the island Archipelago focusing primarily on the development of artisanal, commercial and recreational fisheries. The association of the islanders with the sea has a long tradition and has evolved from subsistence methods to capital-intensive efforts. That evolution, however, has been affected by problems of technology transfer, lack of investments and mismanagement. Artisanal fishing which had its beginning in the 15th century is still practiced widely throughout the islands. Commercial fishing is primarily limited to the tuna industry and is expected to receive substantial subsidies in the next few years through the European Common Market initiatives. For many years, the fishery sector lacked any kind of innovation or government assistance due to political instability in the 1960's and 1970's. With a democratic administration, however, the marine industry has improved and expanded over the past decade, but at a slower rate than most other sectors of the economy.

Overall, production of fish has been increasing every year since the 1970's.[2] Most recent data on landings of fish caught in Azorean waters indicate that not only has the total tonnage of fish increased, but also its total value.

Table 1 and 2 show a summary of 1985-88 data for the ten largest ports in the Azores.[3]

TABLE 1
Quantity of Fish Caught in Kgs. (1985-1988)
(in 000's of kgs.)

Port/Island	1985	1986	1987	1988
Ponta Delgada - São Miguel	3.710	5.217	5.161	5.104
Madalena - Pico	2.641	3.640	3.918	4.937
Santa Cruz - Faial	2.519	3.026	3.866	4.117
São Roque - Pico	648	697	1.428	2.019
Rabo de Peixe - São Miguel	874	850	795	619
Lagoa - São Miguel	463	562	718	695
Vila Franca do Campo - São Miguel	799	694	608	543
Ribeira Quente - São Miguel	850	717	567	771
São Mateus - Terceira	531	612	455	445
Vila do Porto - Santa Maria	306	579	384	367
Totals	13.341	16.554	17.900	19.617
TOTAL OF ALL 54 PORTS IN THE ISLANDS	**15.313**	**18.707**	**19.721**	**22.166**

TABLE 2
Value of Catch Per Port (1985-1988)
(in 000's of escudos)

Port/Island	1985	1986	1987	1988
Ponta Delgada - São Miguel	292.136	439.086	688.991	817.898
Santa Cruz - Faial	135.462	180.651	295.385	357.345
Rabo de Peixe - São Miguel	157.263	161.077	159.234	174.718
Madalena - Pico	88.645	108.042	106.518	129.027
São Mateus - Terceira	60.529	81.194	90.310	107.564
Praia da Vitoria - Terceira	38.911	67.807	78.107	99.040
Lagoa - São Miguel	53.373	72.321	74.812	91.063
Vica Franca do Campo - São Miguel	79.391	79.463	71.566	71.573
São Roque - Pico	18.240	21.474	39.262	54.470
Vila do Porto - Santa Maria	26.748	47.854	35.173	34.864
Totals	950.698	1.258.969	1.639.358	1.937.562
TOTAL OF ALL 54 PORTS IN THE ISLANDS	**1.229.388**	**1.545.027**	**1.902.278**	**2.283.353**

The figures clearly indicate considerable fluctuation in fish harvest and the increases are primarily observed in the commercial ports of Ponta Delgada, Santa Cruz, Madalena, and São Roque. Many artisanal ports, with few exceptions, all decreased their landings of fish caught from 1986 to 1988.[4] The

introduction of tuna vessels in selected ports and the fact that artisanal fishermen have been docking their vessels at some major commercial ports and selling their fish there, have been some of the reasons for the uneven production. There are 54 registered fishing ports in the Azores; 50 are artisanal and only 4 are considered commercial operations.[5] (See Appendix C) São Miguel is the largest island of the Archipelago and the most populated. The island also has the second largest number (20) of artisanal ports in the region, therefore making it the most important producer and exporter of fish and fish products. It is Pico which has the largest number of ports of any island (26), but because they are all artisanal in nature its total production is less than that of São Miguel.

Artisanal Fisheries

From country to country, artisanal fishery problems are very similar in nature. As defined by the Commission of the South Pacific and accepted by the FAO in 1976:

> Artisanal fisheries, is characterized by intensive labor and a level of social mobility, market potential and financial dependency, that makes them subordinate to the economic decisions and operations imposed by the buyers of their product.[6]

Clearly, many aspects of this definition apply to the Azores as well. Artisanal fisheries in the Azores are characterized by the use of small boats with small motors or no motors at all and consequently the fishing grounds are very close to the coast. The fishing trips last on the average of one day and the fish are kept at ambient temperature due to a lack of refrigeration on board.

Small scale fisheries in the islands have been controlled for many years by local fish dealers. Lacking the organization, fishermen depend almost totally on someone else to buy their product, therefore, selling it at a price determined by forces outside the fishing community.

According to 1988 figures, landings are recorded from 54 artisanal fishing ports throughout the island Archipelago, however, there are another 56 very small ports for which no data is collected.[7] The general distribution of all registered ports are shown in Figure 2. As is evident from this spatial pattern, their location is largely determined by such factors as population centers, historic aspects of the industry and each island's economic conditions. By far the most productive ports are Madalena and São Roque on Pico and Santa Cruz in Faial.[8] The busiest ports on São Miguel are Rabo de Peixe, Lagoa, Vila Franca do Campo and Ribeira Quente. Rabo de Peixe is the largest fishing village on São Miguel; it has a long tradition in marine resource extraction as the case study in a later chapter will indicate. The port of Lagoa is considered one of the best harbors to anchor because of its relatively easy access to the open sea and nearby support facilities. Some 160 fishermen are registered here and it is the home port for 31 vessels.[9] Vila Franca do Campo, once the capital of the Azores, is located on the south coast of São Miguel. This site protects fishermen from the harsh weather conditions of the north coast. The port's capacity consists of 33 vessels operated by 187 fishermen.[10] Ribeira Quente is situated in a bay area, some 50 kilometers from Ponta Delgada, the present capital. In 1984 Ribeira Quente had an estimated 126 fishermen who operated some 25 vessels.

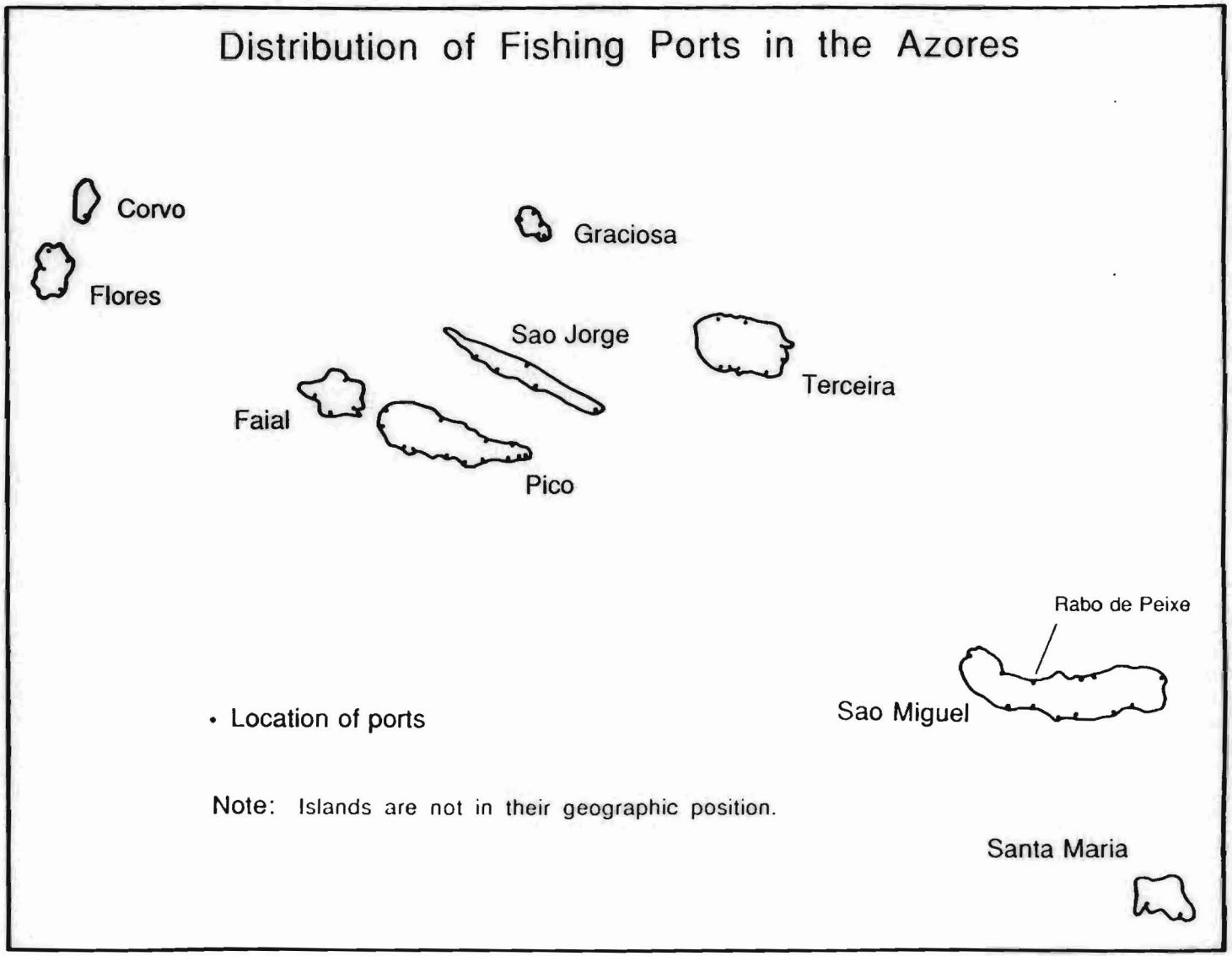
Distribution of Fishing Ports in the Azores
Corvo
Flores
Graciosa
Sao Jorge
Terceira
Faial
Pico
Rabo de Peixe
Sao Miguel
• Location of ports
Note: Islands are not in their geographic position.
Santa Maria

Figure 2

Other fishing ports throughout the islands vary greatly in terms of capacity and landings. Many ports have a severe problem of access to the sea because of extensive cliff formations and steep terrain for many miles of coastline. This situation has also affected the distribution and marketing of fish products from these ports. The smaller ports do not have an auction facility and yet by law all vessels are required to transport their havest to the nearest auction house. If fishermen are unable to do so they must contact the coastal authority referred to as "Cabo de Mar." This land based para-military authority is in charge of policing fishing activities, particularly those related to illegal landings and fishing of illegal species. For example, if a fisherman enters a port without an auction house, the catch may either be confiscated by the "Cabo de Mar" or he may charge the fishermen a fee, which then allows him to sell the fish.

The seas of the Azores are very rich in marine species, but fishermen can only catch certain species due to the lack of technology and fishing gear. The island fishermen are very reluctant to change even though they have been fishing for many generations. Their methods and species caught have not changed very much over time. The specie that has been a tradition in the island's cuisine is bluejack mackerel which is also the number one artisanal fishery in weight and third in value.[11] Other economically important species are bonito, kitefin shark, pilchard, seabreams, forkbeard and those of lesser value. A list of species of finfish, crustaceans and molluscs, their value and quantity caught in 1988, is given in Appendix D.

Commercial Fisheries

The tuna industry in the Azores is a fishery that developed from being artisanal to an industrial activity. Since the 1950's when the first tuna vessels were constructed, the fleet has been growing and is becoming more sophisticated. During the 1960's the tuna fleet suffered several years of low productivity due to a lack of improving fishing effort and search for new fishing grounds. Today, there are about 50 vessels involved in tuna fishing in the Azores, most of them fishing out of the port of Santa Cruz (Faial) and Ponta Delgada (São Miguel). Their size, as well as their engine power have increased over the years, but the lack of a refrigeration system aboard still prevents them from operating at full capacity. The vessels vary in size from 14 to 28 meters in length, with motors ranging from 200 to 500 horsepower.[12] Most fishing vessels only go out fishing for a period of one to three days, their average capture is around 200 tons of tuna. Due to the migratory pattern of the tuna, different species are caught in different locations as the harvest season progresses (Figure 3). The tuna season in the islands is from May to November but fishing starts in April in the eastern islands (São Miguel and Santa Maria) and ends in May. From May until July, the tuna catch is located in the central islands (Terceira, Graciosa, Saõ Jorge, Pico and Faial) and continues to migrate into the western islands (Flores and Corvo). During the month of August there are small schools of tuna located in all three island groups.[13]

Since the tunas are migratory, the most important species caught in the Azores are patudo (thunnus obesus), voador (thunnus alalunga) and bonito

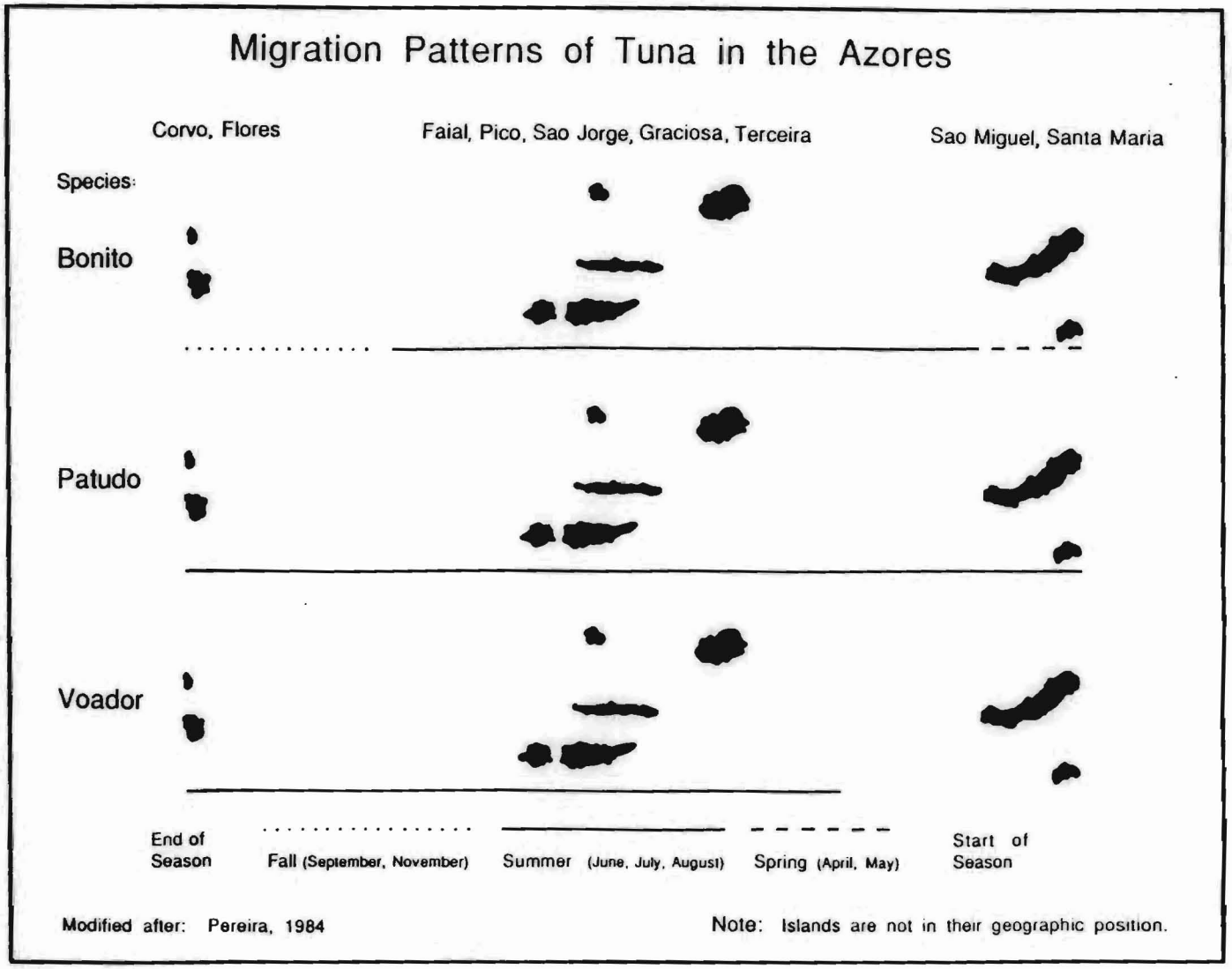
Migration Patterns of Tuna in the Azores
Corvo, Flores
Faial, Pico, Sao Jorge, Graciosa, Terceira
Sao Miguel, Santa Maria
Species:
Bonito
Patudo
Voador
End of Season
Fall (September, November)
Summer (June, July, August)
Spring (April, May)
Start of Season
Modified after: Pereira, 1984
Note: Islands are not in their geographic position.

Figure 3

(Katsuwonus Pelamis). Other species are also found but are of less commercial value and abundance. Patudo and bonito are the species that make up the majority of the landings. In 1988, according to the latest official figures, 14,500 tons of tuna were captured in the Azores, which represents 18 percent in value and 63 percent in volume of all fish landings in the islands.[14] From a different perspective, the commercial sector produced 94.4 percent and the artisanal sector 5.6 percent of all tuna landings in volume. With the entry of Portugal into the European Economic Community the market demand for tuna has expanded greatly. Yet, the canning industry, operating on several islands, needs to increase its capacity for production and to explore new markets. For the Azores to be competitive with other fishing nations that already belong to the European Economic Community, several measures should be taken into consideration:

- Bigger, more modern tuna vessels should be acquired and introduced into the fleet;
- Improving port infra-structures should be a governmental priority for the tuna industry;
- Refrigeration systems should become more widely available in all phases of the industry;
- Inter-island transportation between ports and external markets must be improved;
- New fishing techniques and fishing gear should be made available to fishermen; and,
- Fishermen must be educated to take advantage of new fishing techniques practiced elsewhere and adapt them to their local conditions.

Similar recommendations were already made by FAO in 1977 which

appeared to have made very little impact. In addition, the U.N. report addressed the issue of creating fishery cooperative projects for vessel construction, restructuring the processing industry and a fishery administration.[15]

The most important commercial fishing ports of the Azores are Ponta Delgada, Madalena, Santa Cruz and São Roque. All of these ports share the infra-structures necessary for the operation and development of a commercial port. Ponta Delgada ranks as the number one fishing port in quantity and value of fish caught. Annually, the port routinely produces some 25 percent of the total fish harvest in the islands.[16] This productivity is related to the extensive unloading and freezing facilities, the weather protection offered by the harbor, a modernized cannery (Corretora) and several importing-exporting firms shipping products to Europe, the United States and Canada by air. This is also the only port in the islands where fishermen from other coastal settlements come temporarily and take advantage of the facilities and better weather conditions on the south side of São Miguel. Tuna is the predominant species handled in Ponta Delgada; it is directly transported to a cannery (Corretora), located three miles from the port, where it is processed and shipped directly to Portugal, and other E.E.C. countries.

Madalena and São Roque are located on the island of Pico. These two ports have long been tuna ports and also have easy access and are protected from the prevailing winds. Their development has been enhanced by the abundance of tuna in adjacent waters. One other important tuna port, Santa Cruz, located in Horta on the island of Faial is the second most important commercial fishing port for the Archipelago. This port is located in a well

protected natural bay and has dockage space for over 100 tuna vessels. The port has complete freezing facilities as well as unloading winches which other ports on this island do not have. The Marine Program of the University of the Azores is also located in Horta, assisting in the acquisition of oceanographic and fishery data. The University's research vessel is not only used for scientific research but also to help improve fishing techniques and equipment. This close relationship between the commercial fishing community and the Institute has moved Santa Cruz into the forefront of the island's fishing industry. The government of the Azores is also giving incentives to new investors in developing the tuna fishery on that island.

Whaling

Another marine activity of a more historical nature in the Azores is the whaling industry. Sperm whaling was once a major employer for hundreds of people in all of the nine islands. However, the hunting of sperm whales on a commercial scale occurred only when New England whaling ships arrived in the Azores. Azoreans, who until the 1820's, had not hunted for whales on a large scale acquired the methods and techniques used by the New England whalers. Boats were lowered from these whaling ships and the hunting would proceed. According to Clark Robert, the history of the shore fishery began with those Azorean islanders who obtained their skill from American vessels and afterwards took these methods ashore, and applied them to a shore-based whaling fishery.[17] Shore whaling typically was done in small dories with the use of harpoons.

In the early 1900's when the Azores became an established whaling ground, it became a habit of the New England whaling vessels to employ local fishermen especially from the central islands which were the preferred fishing areas. Again, Faial became the most prosperous whaling island, with a thriving whale factory close to the port. The whalers called on Faial not only for recruits and provisions, but also to tranship the oil. At the peak of the whaling era around the mid-19th century, all of the islands in the Archipelago had whaling factories. Clark notes that during this time 4 to 5,000 barrels of oil were handled annually by the port of Faial.

England and the United States, who were historically the biggest importers of the oil, reduced their need for it due to the introduction of paraffin for candles and the use of kerosene as fuel. Clark estimated that the Archipelago accounted for 72.3 percent of the world catch of sperm whales in 1910 but only 3.8 percent in 1915. A few years later, sperm oil was again in demand and this factor once more brought some economic prosperity to the islands. During the 1920's, oil production fluctuated but the trend was toward an increase of production. In the 1930's new uses were found for the oil in the chemical and cosmetic industry in London, Hamburg and Lisbon. During the 1940's, the oil became again in great demand. After WWII was over, the whaling industry slowly declined. Some of the last whale kills were reported in the mid-1970's and by 1985 the whaling era in the Azores had ended.

Recreational Fisheries

Recreational fishing in the Azores was unheard of until the end of the 1970's, when a group of Swedish sportsmen discovered the Azorean seas. Until then, commercial fishermen were the only ones to report on species that would be a marine angler's dream. Sportfishing is only at its first stage of development on Faial and Pico. The government of the Azores has never seriously promoted sportfishing and what is known about it has been through the experience of European and American anglers who have been fishing in the Azores since 1980.

A small private enterprise by the name of "Pescatur," was formed in the Azores in 1979 by a group of local entrepreneurs; the company provides charter service for any sports fishing crew, from any part of the globe. Since salt water sportfishing is an expensive sport for the islanders, very few participate in this sport. São Miguel and Faial are the two islands that host most of the crews who visit the Archipelago to participate in the fishery.

There are several species that can be caught around these islands, and some of them have already broken world records. Jens Ploug Hansen, on one of his sportfishing trips to the Azores reported that three blue marlins were caught weighing between 120 and 250 kilos.[18] Another trip made by a Swedish team yielded several bluefin tunas with an estimated weight of 300 to 550 kilos.[19] Other prominent species in the area are sharks, albacore, white marlin and billfish. Even though no research has been done on sportfishing in the Azores, several commercial fishermen have caught, by accident, several species of bluefin, marlin and others, thereby identifying several fishing banks for the

sportfishermen. The two most known fishing banks are the "Azores" and "Princess Alice" (see Figure 4).

Since sportfishing is a new activity in the Archipelago, much of the information on seasonality, distribution and behavior for these species has yet to be acquired. According to Hansen, the season can start as early as April with the albacore and proceed with the bluefin tuna in May. In June and July, with the rise in the water temperature, the marlin, billfish and several shark species (mako, white tip and hammerheads), are more common. As the season progresses, it has been reported by Francisco Van Uden, that from August until September, his crew was involved in 109 marlin strikes.[20] Toward the end of August, marlins with over 350 kilos were captured by local sportfishermen. The peak of the season for sportfishing is from middle August until October. After that time, the water temperatures start to drop until some species disappear completely.

Angling in the Azores is far from developed and yet anglers worldwide increasingly have come to the islands to enjoy one the best fishing grounds of Portugal. There are several important species that predominate in the Azorean waters. Thus, sportfishing has many potentials and if developed could play an important role in the promotion of the tourist industry.

Other Marine Products

Aside from being abundant in finfish, the coastal waters are also rich in marine fauna such as agar agar, a seaweed found along the rocky shores of most islands. The seaweed is used worldwide in the pharmaceutical and

cosmetic industries. At the present time, there are only two factories in the Archipelago; one is located in São Miguel and the other in Terceira. The factory located in São Miguel processes part of its seaweed production with other materials into fertilizer. Their capacity of recycling is 2500 tons of the seaweed a year.[21] The production of these factories can be easily raised if more seaweed could be collected. Most picking is done by women and children who gather the seaweed at low tide near the seashore, or by a small number of divers who gather it further out in deeper water. In either case, these small operations are done in a very rudimentary way and then only on certain days when the sea and the weather permit. At the present time, the seaweed factories are only working seasonally due to the inefficient harvest methods and the limited number of collectors. Most of the production of the agar agar is exported to the USSR, Spain, Switzerland, Japan and the United Kingdom.

Two other species, the spiny lobster and the "lapa" (mussel), are local delicacies, but few are consumed domestically because of high market prices and overseas demand by immigrant communities in the United States and Canada. Mussels are caught by local divers in several parts of São Miguel but the village of Mosteiros on the southern coast specializes in this particular specie. This fishing port is unique in the way that it produces most of the mussels sold in the Azorean auctions. Many of the fishermen of this village are mussel divers. This fishery is so profitable that mussel divers only work two or three days a week; a kilo of lapas may bring as much as U.S. $20.00; relatively little of that, however, goes to the diver. The lapa fishery, because

of the depletion of the stock, has recently been ordered on a restricted fishing season and sites where divers can harvest are limited in number.

Although lapas is one of the most desireable species on the local market, there is another mollusc that is protected by the Azorean government due to a fear that extinction could occur in the near future. This specie can be found in all the islands which is locally called "craca," a barnacle. This mollusc varies in size, measuring up to five centimeters in length, and up to seven centimeters in diameter at the base. Within this category of mollusc, a smaller size can also be found attached to the rocks offshore. In spite of the high fines applied by the government to anyone caught catching this species, they can still be bought on the black market for very elevated prices. Barnacles are a delicacy of the Azorean kitchen and even though they are not exported, local demand sets their price well above those of the lobster.

Conclusion

An attempt was made in this chapter to describe the diversity of the island's marine economy with a closer view toward the artisanal fishing sector. Historically, the islands' have always looked toward the sea and its resources as an important contribution to their overall economy, even though that contribution is still relatively small. Statistics indicate a slow but steady increase in total fish production throughout the islands; by weight the increase was about 30 percent, by value 80 percent between 1985 and 1988. The task today is to increase the fishing activities through both domestic initiative and foreign assistance. For example, taking advantage of the available subsidies from the

E.E.C. until 1992 is high on the agenda for the regional government. Yet, since the fisheries in the Azores are primarily artisanal in character, it will be difficult and slow to convince fishermen to participate in the subsidies program. There is also the potential to improve tourism by taking advantage of the species sought after by recreational fishermen in local waters. Equally important is the fact that local authorities are becoming more and more aware of the widening gap between supply and demand of marine products. Measures are being taken to prevent overfishing, illegal harvest and selling outside the auction system in order to exercise some control over such diminishing species as lobster, lapa (mussel), and craca (barnacle).

CHAPTER III

THE AUCTION SYSTEM: THE AZORES AND NEW ENGLAND COMPARED

Introduction

Fish auctions in most countries of the world are created in order to determine a fair market price that should be paid by the buyers to the fishermen for their landings. The dispute between fishermen and dealers has always been a difficult problem to resolve, because fishermen complain that the prices they get for their catch are low in comparison to what the dealers get for the same product in the market. Dealers, on the other hand, disagree with this claim, arguing instead that due to the poor quality of the fish being offered at auction houses, a higher price is not justifiable. Since most auctions do not have a workable system of quality control, price disputes between fishermen and dealers will always exist.

Due to a variety of social, economic and political factors, a number of auction systems have been devised to meet the local circumstances among fishing communities. This chapter will review the nature of the auction as it is currently practiced in the Azores and the operational aspects of auction systems in New Bedford, Boston and Portland, three important fishing ports in New England. An attempt will then be made to compare various aspects of the Azores experience with those fish auctions in the U.S.

The Auction in Rabo de Peixe: Administrative Aspects

The fish auction in Rabo de Peixe is not only the center of all activities in the fishing village but it also exercises a significant influence over the people's livelihood and the distribution of fish products on the island. The auctioneers are respected members of the community and fishermen gather around the auction building daily to socialize, repair equipment and debate prices with dealers. More importantly, however, it is here where government intervention on the local fishery is most directly experienced by those associated with the auction. The principal agency which supervises all operations is locally known as Lotaçor, which was created in 1981 by the Ministery of Fisheries and has been given complete administrative and financial autonomy over its operation. Lotaçor's primary objectives include:[22]

- **Maintaining quality control.** This is partly achieved by inspecting the catch and by providing containers for handling the product during the auction process.
- **Representing the fishermen.** Auctioneers employed by Lotaçor represent fishermen in the transaction of their harvest with dealers.
- **Storing the product.** Preserving, storing, and refrigerating fish is done with facilities owned and operated by Lotaçor.
- **Commercializing the product.** All activities related to sorting, weighing and selling of the catch are supervised by the agency.
- **Collecting operating expenses.** To maintain the auction system Lotaçor collects fees and taxes from both buyers and sellers of all products handled by the auction.

The objectives outlined above are exclusively performed by the staff of Lotaçor. On the local level, each port has an auctioneer which is appointed by Lotaçor to enforce regulations established by the agencies. The responsibilities of the auctioneer are summarized below.[23]

- Enforce the order of entry of fishing vessels and their catch into the auction facility.
- Supervise the sorting and weighing of the fish by species and size into containers.
- Tag each container with the weight of the fish, order number of entry and the name of the captain and his vessel.
- Act as auctioneer according to the regulations of auctioneering established by Lotaçor.
- Report all deductions from captains and fishermen for the purpose of a retirement fund.
- Gather relevant statistics for future scientific research and administrative decision-making by Lotaçor.
- Register all fish sales on invoices which contains the following elements: (a) date of sale; (b) name or number of vessel and the vessel owner's name; (c) species or group of species; (d) total quantity; and, (e) unit price or price per kilo of all species and its total value.
- Issue to the dealers or buyers all necessary documentation authorizing their sale. These documents or receipts have to include the following information: (a) auction house number; (b) date of purchase; (c) name of the captain; (d) name and social security number of the buyer; (e) species of fish purchased; (f) unit price of the catch and total value; (g) number of plastic containers taken; and (h) taxes paid.

The Auction in Rabo de Peixe: Operational Aspects

In this section, the functional aspects of the auction system of Rabo de Peixe are briefly outlined. On a typical day the first fishermen arrive at the port around 5:00 a.m. The crew immediately embarks upon unloading the fish they caught on that day. Lotaçor requires that the catch be sorted by species and size before it enters the auction facilities. All fish have to be displayed in standard containers which are provided by the auction. These containers are designed to minimize fish being crushed and to maintain uniform species and quality. If a captain decides to mix different species and sizes in the same container the auctioneers have to be informed to authorize such a procedure. Later, when that tray comes up for sale, the dealers have to be informed as well. This is quite a common occurrence in Rabo de Peixe due to the fact that fishermen frequently come home with a catch that consists of a wide range of sizes, species and quantity of each species. According to the order of arrival, each container is weighed and tagged. The tags display the name of the vessel and the vessel's captain, as well as the weight of the catch.

The auction procedure in the Azores is patterned after the Dutch (descending-bid) System where the auctioneer generally will start by asking for a price above what he expects to sell the product for. He then drops the price in standard increments until the first dealer agrees to buy at that price.[24] There is considerable interaction between the participants; the auctioneer the fishermen and the dealers. The guidelines, actions and reactions which determine the auction process are briefly described below in a general sequence of events.

In Rabo de Peixe the auctioneer depends on his voice; no sound system is used. He starts the bidding with a maximum price and as the buyer comes to a point where the price is right, he calls out the word "chui,"[25] meaning that the buyer can buy any amount of that particular species at that point. The buying word "chui," however, is void whenever a dealer pronounces the word shortly before the auctioneer had a chance to announce the next lower price. In this case the bidding will continue for that species with the auctioneer starting with a higher price than the previous one. If two or more dealers say "chui" at the same time, and the auctioneer cannot determine the order, the auction is continued and the price for that species will increase.[26]

In general, the values used by the auctioneers as a starting price is the previous day's highest price for that particular species. Such values can be changed, depending on the quality and quantity of the fish arriving at port on that particular day. The captain of the vessel always has the right to deny any offer that he and his crew think is unjustifiably low. When a situation like this arises, the auctioneer starts the auction with a higher price and in case the captain does not want to sell, then he has to come back later or the next day.

After the sale is made and the money is collected by the auctioneers from the individual buyers, all deliveries are picked up by the dealers at the auction premises. The buyer or its representative is required to present to the auction authorities a bill of sale prior to loading the fish. Auction employees are not authorized to release any fish to any buyer without the bill of sale. The payment system of Lotaçor requires all dealers to pay immediately at the end of the auction. A dealer can be given credit for three days after the sale is

made if he can provide evidence to Lotaçor that he is bonded. If a dealer is bonded, the sale of fish acquired by credit shall not exceed the value of the bond, otherwise the excess must be paid upon pick up.[27]

If there is a dispute over fish quality or damage, the auction's manager can call an individual, who may be both a veterinarian and sanatarian inspector. The payment made to the veterinarian, if requested, shall be made by the dealer who started the dispute. In case the veterinarian rules in favor of the dealer, then Lotaçor must pay the bill. Once the fish leaves the auction, Lotaçor will not accept returns under any circumstances.[28] Lotaçor, being a public enterprise, charges certain fees for handling all fishermen and dealer transactions. For example, if a vessel brings in a catch valued at $1,000 to the auction, four percent of that amount is charged to both fishermen and dealers after the sale. Lotaçor also charges a fee for the use of the plastic containers used for storing and handling of the catch.

Most ports of the Archipelago lack adequate refrigeration storage and while most larger ports in the islands have some refrigeration facilities, they do not meet current needs. In order to use the refrigerators at the auction facility, the captains have to obtain a permit from Lotaçor 24 hours prior to the storage of the catch. This procedure is carried out on a first come, first served basis. The late arrivals are usually left out of the opportunity to refrigerate their catch and consequently must sell immediately.

There are also some legal aspects related to the auction system. Since the Azores are composed of nine islands with hundreds of miles of coast and 54 officially designated fish landings, it is virtually impossible to control all

vessels coming through ports with no auction. Most fishing vessels berth at a port with an auction system, but occasionally some smaller vessels try to avoid the system or the port is too small to support an auction. Whenever any fishermen are caught by the coastal authorities bringing fish to the islands without passing through Lotaçor, the fish is confiscated and then auctioned off. Its proceeds are kept by the regional government.

While the auction system is designed by Lotaçor to provide fair and efficient market procedures for fishermen, no enforcement of its regulations exist. For example, it is well known that no fish in the Azores can be sold without passing through the auction system. It is impossible, however, to control all landings every day on the islands. In the case of damaged ("roto") fish, it is also against the law to sell them to the nearest buyer. Rather, they must go through the auction at a reduced price. Auctioneers are neither permitted to buy fish for themselves or anyone else, nor can they represent fishermen or dealers during the auction. To what extent these guidelines are followed is not known; violations are known to have occurred where inadequate supervision continues to prevail.

The New Bedford Auction

The New Bedford auction system is very well organized and competitive and based on the English (ascending-bid) System. Every morning before 8:00 a.m. all captains are required to post the following information on the auction board: the vessel name, all species and quantities caught during that day, and sometimes the locations where the fish were caught. The hail (defined as the

estimated quantity of species landed by size) is listed on the auction board by specific size classes (locally referred to as cull).

For example, cod may be listed as:

Vessel Name	Size Class	Quantity
Gail Ann	Whale Cod*	100 lb.
	Market Cod	250 lb.
	Large Cod	500 lb.
	Scrod Cod*	1,000 lb.

* Whale refers to the largest size (greater than ten pounds) while the scrod cod is designated as the smallest size class (3-3.5 pounds). Other species are similarly classified but there is some variation by species (see Appendix E).

This information is vital to the buyers in order to establish their own price structure for the day. Prices are determined on a per-pound basis and by increments as small as one-tenth of a penny, so that the final cost per pound could be $1.02 2/10 or .50 6/10.[29] The participants of the auction are now ready for the bidding process, which begins with a ring of a bell at 8:00 a.m.

It should be pointed out that in New Bedford, the buyers have to purchase a vessel's whole catch and not a part of the catch as in other New England ports. However, since the buyers are not able to inspect the fish, their judgment is based heavily on the captains reputation and past business transactions with them.[30] The bidding, which is done by the buyers (not the auctioneer), follows a pattern where the bids are based on increased prices. This process continues until 8:15 a.m., when the bell rings again, which indicates a temporary interruption of the bidding procedure. Within the next two minutes, the captain of each vessel has to decide whether to accept the determined price or to withdraw from the sale, usually known as "scratch the

vessel." Meanwhile, the dealers contact the companies they represent to discuss the New Bedford prices and those of other auctions in the region to determine the best possible deal for the product. At 8:17 a.m., the bell rings once more, at which time the bidding resumes for another five minutes. This gives dealers an opportunity to adjust their prices due to the withdrawal of some vessels, which have posted "no sale" or have renegotiated with secondary dealers. In many cases, primary dealers depend heavily on secondary buyers to complete the sale of the entire hail of a vessel. Toward the end of the auction period, bidding becomes extremely competitive. In some instances, dealers may increase the price on a species of very small quantity, in order to raise the bid at a lower cost. At 8:22 a.m. the bell rings for the last time and the dealers' names, which are on the board at this point get the hail.

Once a dealer buys a vessel, it steams to the unloading dock, where the fish is inspected for the first time. It is at this point in time that disputes over quality and other issues can arise. Yet, in New Bedford the fishing industry has no system where disputes between dealers and fishermen can be settled. Today, New Bedford has a private auction system, which implies that only union vessels are required to sell through the auction; all others, such as the Portuguese-owned vessels can sell directly to processing plants.[31] Furthermore, the New Bedford auction only accepts selective edible fish, such as black back, yellow tail pollock, cusk, and other species suitable for fillet. Large pelagic species, such as swordfish and tuna, as well as squid, butterfish and scup are sold directly to individual dealers. The fee charged by the union for auctioning each vessel is $50.00.

The New England Fish Exchange in Boston

In Boston all fish are landed at the New England Fish Exchange where the hail is sold by species rather than by vessel. Like the New Bedford auction, it too has adopted the English system and does not allow buyers to inspect the catch before it is sold.[32] The auction sometimes operates well into the afternoon depending on the amount of hail waiting to be sold. The auction in Boston officially opens at 6:30 a.m., at which time all vessels must be docked or within sight of the Fish Pier. The auctioneer starts accepting bids at 6:30 a.m. Each species is bid on for about three minutes until a bell indicates buyers have one minute left to close their deal. If the auctioneer does not sell everything of a particular species, the unsold amount will be offered again for sale later in the auction.

In this auction there is a peculiar practice called the "80% rule," which basically states that in order for a captain to sell the catch of a particular species for the highest price, he has the choice to sell at least 80 percent of it. In other words, if 10,000 pounds of cod are auctioned off at a price of $1.00 per pound and someone raises the bid to $1.10 per pound, the captain cannot sell less than 80 percent of that cod for the higher price. If he decides otherwise, or does not have a bid for at least 80 percent of that specie, his choices are to either scratch the whole sale, or to sell all of it for the lower price ($1.00/lb).

Dealers can buy from different vessels, different quantities and species which give them greater flexibility than in most other auctions. The captain or boat owner can "scratch" individual species from the board if he does not agree

with the price offered. Even though captains have the option to withdraw certain types of fish from the board, only a maximum of three species are allowed to be "scratched." If the captain decides to eliminate more than three species from the sale he is then forced to withdraw his entire hail from the auction and must wait for the next day. In addition, there is a five percent penalty for scratching up to three species from the board; there is no penalty if a captain withdraws the whole vessel from this auction. If the vessel comes back the next day to the auction with the scratched species, a five percent credit will be given to the captain.

The sale of a catch can be divided in several different ways. The total quantity listed on the auction board can be sold separately to private buyers or through the auction. However, it is important to point out that at least fifty percent of the catch must be sold at the auction, the remainder can be "bagged" and sold privately.[33] The bagged fish has the advantage of being sold for the same price as the other fish on board, and it also guarantees the dealer a certain amount of a given species. Even though dealers benefit from securing for themselves the needed amount of fish, so do the fishermen, since this practice brings them a guaranteed sale.

The determination of the price at the Boston auction system is as complex as the division of the catch among the buyers. If a species for a particular day is sold for $.40 per pound, then all vessels receive almost the same price for that species. Minor variations occur often due to the experience of the captain and the way the catch has been stored on the vessel, which may determine its quality. In any case, dealers who raise the price through bidding,

will do so for all vessels since Boston sells by species. This practice has been carried out for many years and fishermen whom I interviewed felt this to be a fairer system than in New Bedford where the price structure is based on the sale of a whole vessel. Based on the daily price each vessel is assessed one percent by the Exchange; one percent is charged by the auctioneer (up to a maximum of $150.00) and half a percent by Massport. These fees are based on the gross stock of each vessel for the purpose of operating the auction, berthing at the Fish Pier and service of the auctioneers.

Once the auction is completed, dealers approach the vessels to inspect the unloading and quality of the catch. In Boston the procedure of dividing the catch among several dealers is designed to reduce conflict and promote equity. The dealer with the largest purchased share of a particular vessel gets to unload first, but only about half of the share. Other dealers get the opportunity to unload according to the amount they purchased from the same vessel. Since each dealer gets to unload only a share of his purchase during the first round, the procedure repeats itself until each buyer has obtained their pre-determined quantity. As can be expected, it is during the time of dividing the catch that dealers are sometimes subject to disagreement regarding quality. If necessary, inspectors from the auction may be called in to resolve the dispute.[34] If the fish is said to be of lower quality, an agreement is usually reached to sell the product at a lower price or send it through the auction again. If the inspector determines that the fish is in good condition and the dealer refused to pay the original price, the fish goes back to a second auction. While someone else may buy the fish this time, the dealer who refused the purchase is obligated to pay

the difference between the old and new price. Resales, however, do not occur very frequently except in the summer months when maintaining quality becomes more difficult.

In the larger auctions of New England it is common practice to accept fish deliveries from smaller ports in the region. Due to economy of scale the Boston Exchange can offer higher returns and a more diversified market. Producers from Canada, Maine or Cape Cod can either sell fish directly to a local dealer or through the auction. The New England Fish Exchange is not limited to primary dealers but small distributors as well, making this auction more accessible and competitive. Other producers come to Boston not for the auction, but rather to sell their fish directly out of their trucks to local dealers. This, however, presents a disadvantage in that payments are usually made several weeks later, while the Exchange reimburses fishermen on the same day.

The Portland Fish Exchange

The Portland Fish Exchange is one of a few auction systems in the United States where buyers are permitted to examine the fish before they are sold; in Hawaii the same practice exists. The Exchange does not allow any contract sales and all transactions are performed by the Exchange auctioneers. The auction is a non-profit corporation owned by the city of Portland, and is equipped to handle eighty percent of the fishing vessels registered in that port. The Portland Fish Exchange unloads vessel and truck deliveries from other ports before the auction begins and displays the fish in a modern, refrigerated auction

facility.[35] The Portland Exchange in New England handles approximately 13 million pounds annually.

All fish entering the Exchange go through a rigorous system of sorting and classification to get the products ready for the auction. As vessels arrive at the pier of the Exchange, their catch is immediately unloaded via conveyor belt by Exchange employees. As fish move into the building they are culled, iced, weighed and packed in standardized containers. Species such as cod and haddock must be dressed and gilled at certain times of the year (May-December) on board the vessel. Since the Portland Exchange is a display auction, containers are arranged and grouped on the auction floor by blocks. This type of layout provides buyers with the opportunity to inspect the fish by species, cull and vessel identification. Each lot occupies several pallets with containers stacked up to a total weight limit of 900 pounds. Clearly, this kind of preparation and organization results in maximum efficiency and smooth operation. During my visit to the auction on August 16, 1989, the Exchange processed 50,000 pounds of fish in less than two hours.

The Portland Exchange is open six days a week from 5:00 a.m. to 9:00 p.m. daily. According to Exchange guidelines, fish are displayed and auctioned by species, cull and vessel. For instance, the size class -- large cod from vessel #1 would be auctioned first, followed by large cod from vessel #2, etc., to the last vessel with the same size class. Then the auction proceeds with the next class -- market cod, starting with the last vessel and ending with the first. Then the system continues with the next lower class -- scrod cod, moving down the aisle to the last vessel load. For an example of the display, see Figure 5.

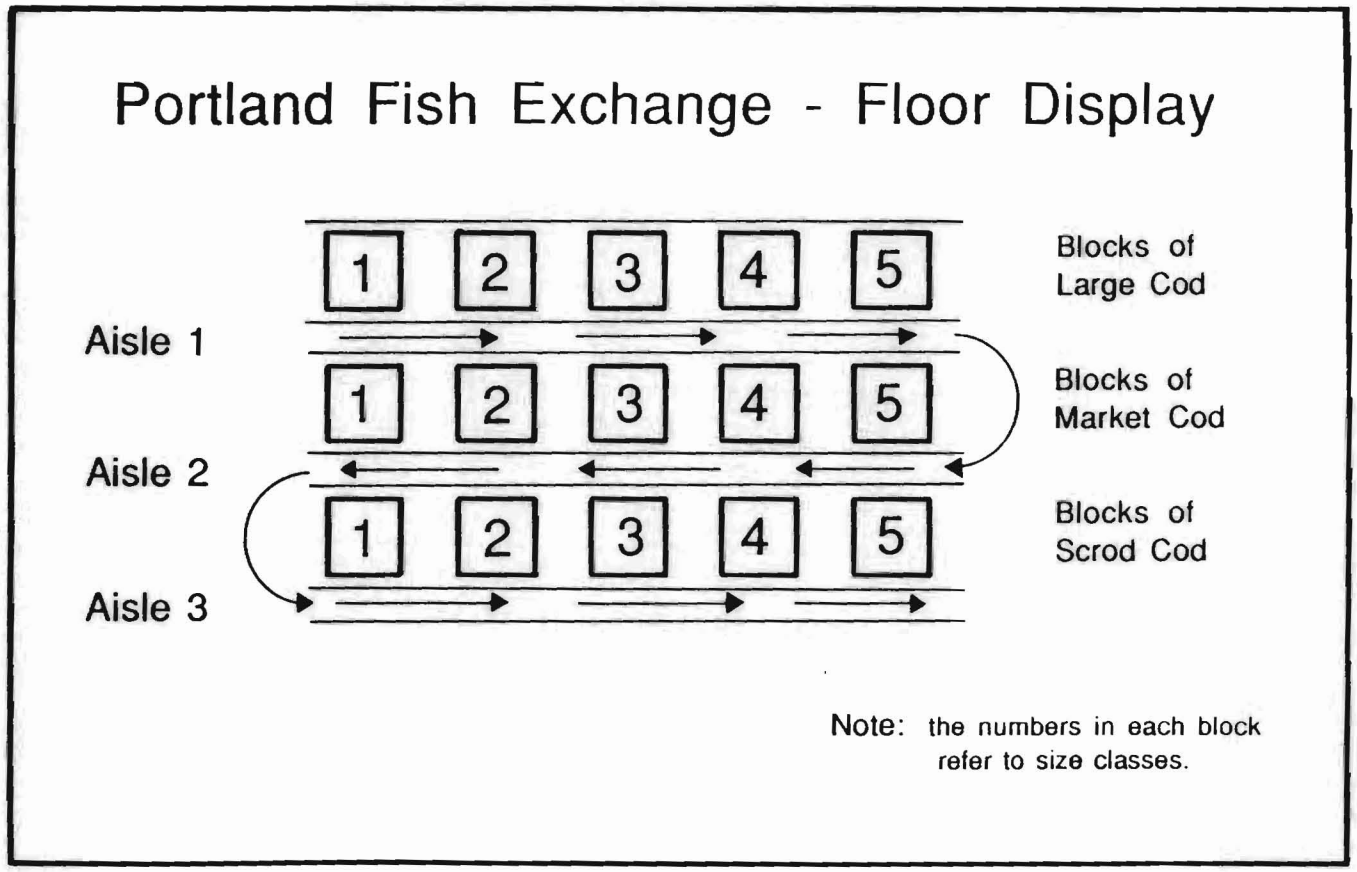
Portland Fish Exchange - Floor Display
1
2
3
4
5
Aisle 1
Blocks of
Large Cod
1
2
3
4
5
Aisle 2
Blocks of
Market Cod
1
2
3
4
5
Aisle 3
Blocks of
Scrod Cod
Note: the numbers in each block
refer to size classes.

Figure 5

Upon arrival at the auction all buyers are provided with a form which resembles the auction board, listing species, size classes, weight, lot number and seller's name. (Appendix F). As the auction starts, the auctioneer, using a wireless sound system opens the bidding for the first species listed on the form. As the bidding proceeds, the price increases; the highest bidder then has the choice of selecting the desired pallets in a block. However, there is a maximum limit of ten pallets (9,000 pounds) of any species, and a minimum of one per buyer per bid. At the time the highest bid is reached and the seller agrees to the price, the sale is completed. If the seller refuses the highest bid, the dealer will make a final rebid which may or may not be accepted by the seller. If accepted, the transaction is final, if not the species from this particular vessel are scratched from that day's auction. The seller also has the option of returning the next day or to sell the catch outside the auction.

Even though the Portland auction starts at 1:00 p.m., there is no time schedule for unloading the vessels. The Portland facility remains open until all transactions are completed (2 to 4 hours). The sellers are paid by the Exchange within 24 hours of the sale. The Exchange charges both buyers and sellers an escalating handling fee based on the price per pound. For example, if a species is sold for up to $.35 the fee is $.03; from $.36 - $.75, the fee is increased to $.035; for over $.76, $.04 is charged. Other services provided by the Exchange for an additional fee are air freight containers or additional ice. At the end of an auction each buyer is informed of his current balance based on his letter of credit. The balance cannot be overdrawn unless cash or a certified check is presented to the Exchange prior to the auction.

Another important feature of the Portland Fish Exchange are the requirements to become a member of the "Exchange Seat." According to the General Manager, a potential member must comply and accept a series of regulations established by the Exchange authorities. For example, a seat holder must maintain an irrevocable letter of credit with the Exchanges's corporate bank, (Maine National Bank), conduct his business at the Exchange in a professional manner, and hold the exchange harmless for any business transactions. Membership on the Exchange is intended for the marketing of all fresh fish with dealers, wholesalers, and retail purchasers with good credit and business standing. In order to become a seatholder on the Exchange, each seatholder shall pay $7,500 annually, $6,000 of which shall be credited to the payment of purchase fees. Each seat holder must also have a letter of credit of at least $5,000. Clearly, the Exchange not only promotes the quality of the product, but also represents an open market for the selling and buying of fish through the auction system.

Conclusion

This chapter reviewed four auction systems in order to assess the operational character and compares their application to the Azores. Some of the features all auctions have in common include the option of fishermen to "scratch" their vessel, charge service fees to both fishermen and dealers, and functions as intermediatory between fishermen and fish dealers. Clearly these similarities far out number the differences contained in each fish auction reviewed. First, most New England auctions are patterned after the so-called

English system which generally prevents the buyers from bidding for the product sight unseen and follows competitive increased bidding. The auction at Rabo de Peixe is characterized by the Dutch system where the initial price is high and gradually decreases through the course of the bidding. Another exception is the Portland auction which operates a display system; dealers enjoy an open, easy entry marketplace. The only auction operating as a public enterprise is the one in the Azores, the others in New England are privately-owned and administrated.

As to the method of how fish are sold to the buyers, New Bedford is the auction which requires the purchase of a vessel's entire catch. The other auctions including Rabo de Peixe offer a more flexible approach allowing buyers to select their procurement by species, size or weight of fish. Yet, at the Portland auction a minimum and maximum weight limit is specified per sale. There is also considerable variation in the way auctions are scheduled on a daily basis. In Rabo de Peixe the auction opens with the arrival of the first vessel and operates as long as there are vessels coming in. The New England auctions operate on a much tighter schedule; New Bedford auction takes only 22 minutes in the morning, while the Boston and Portland auctions generally last two to four hours.

To what extent do auctions provide services and facilities to clients? In Rabo de Peixe a power winch, dry dockage and the auction house are owned and operated by Lotaçor. Crushed ice is available to fishermen at a modest price but refrigeration facilities are limited and must be reserved on a 24 hour notice. In contrast, U.S. auctions for the most part provide ice as part of their service charge while the use of the auction facility are overhead expenses

usually covered by members of the auction system. The Portland Fish Exchange has some of the highest operating expenses due to its spacious auction facility which is kept at 34° F.

CHAPTER IV

THE FISHERMEN OF RABO DE PEIXE: THEIR PERCEPTION AND SOCIO-ECONOMIC CHARACTERISTICS

This chapter is about the local fishermen, their socio-economic status, level of education and how they view their occupation and relationship with the administration. The data was obtained through interviews from a sample of about one hundred fishermen of the village of Rabo de Peixe. It should be noted, however, that given the educational background and general mistrust of fishermen toward outsiders, the results in this analysis must be viewed with some reservation.

Marital Status, Age and Income

The sample population of fishermen indicates a high marital status and a wide range of age indices. The survey revealed that 75.0 percent of all fishermen interviewed were married, and 25.0 percent were single. Fishermen marry young and following the local tradition of having enough children to help them sustain the hard life of living with the sea. The average number of children for married couples is 4.7; some 20.0 percent of them have more than 7 children and two couples have 15. The age of the fishermen in Rabo de Peixe ranges from 14 to 75 years of age, although many younger children are

seen actively involved in light routine work such as preparing bait or cleaning vessels. Many small children are frequently engaged in playing with toy vessels reflecting on the surroundings in which they grow up.

The age categories 20-35 make up 55.0 percent of those interviewed and may be considered the economically most active population. The relationship between the economically most active and non-active population is expressed by the dependency ratio. The old age groups (over 65 years of age) and the young (below 15 years of age) make up about 35.0 percent of the population. Thus, as is typical for a low-income society, the young and old account for much of the heavy burden on the working population. However, it should also be noted that due to the absence of adequate social security and welfare benefits fishermen work far beyond the age of 65 while the young enter the labor force at a very early age.

Data on income was not obtained during the survey because fishermen do not keep records; they sometimes receive payments in kind and their remunerations vary greatly from day to day. Based on conversation with some respondents, their cash payments vary according to volume of the catch, supply and demand, and variations in the fishing season. As a rule, if a crew member earns 1.500 escudos per day (approx. US$ 10.00) and the average fishing season is 200 days, the total annual income could amount to about US$ 2,000; considered by many to be a low income.

A more detailed analysis of how a gross stock (value of the catch) can be divided by members of a fishing expedition is revealed through the lay system. In New England two systems are widely practiced, the "clear" and the

"broken" lay. Theoretically, in a clear lay, the gross stock is divided between the vessel owner and crew according to a pre-arranged formula; in a broken lay, by contrast, expenses are first deducted from the gross stock and the remainder is divided between the vessel and the crew[36] In practice these methods are not as clearly defined, and throughout the Azores a modified version of the broken lay is applied. As an example of how a broken lay works in Rabo de Peixe a crew of fifteen including the captain who is a vessel owner will serve as a typical case in point. The crew share, the expenses and the return to the captain are illustrated in the table below:

Table 3

Arrangement of a Broken Lay by Share

1. **Gross Stock** 40.000
(daily average)

2. **Trip Expenses:** 10.000
Diesel 5.000
Bait 5.000

3. **Gross** 30.000
(after trip expenses)

4. **Crew Share** ..... 23.670 $\frac{30.000}{19}$ = 1.578 crew share (15 members)

15 X 1578 = 23.670

5. **Return to Captain** .....7.908 5 X 1578 = 7.908

- Captain
- Engine
- Boat
- Gear
- One Crew Share

total of 5 shares

Typical Shares:	
Crew members	(15)
Captain	1
Engine	1
Boat	1
Gear	1
	15 + 4
Total Shares	19

In this example each crew member gets 1.578 escudos or $US 10.00 and the captain earns $US 50.00 on this particular trip. In addition to this allocation system, a captain could raise his contribution by operating several vessels and for crew members they often receive small quantities of fish for their own consumption. Clearly an assessment of income for fishermen involves a variety of variables that fluctuate by season, landings, price and type of lay system.

Educational Achievement

The level of education is examined by age, marital status, number of children and years as a fisherman. Even though the population sample was part of the lower class in Rabo de Peixe, their educational achievements by local standards is even lower. Of the total respondents 29 percent had no school at all and 74 percent of them received less than five years of education. Only one respondent among the fishermen received eight years of school. Education by marital status almost consistently shows that married fishermen had less years of schooling (Table 4).

Table 4
Marital Status of Fishermen
(Ranked by Years of Education)

Years of Education	Sample Size	Marital Status	
		Single (n)	Married (n)
0	29	13.7 (4)	86.3 (25)
1-3	21	28.5 (6)	71.5 (15)
4	24	20.9 (6)	79.1 (18)
5-8	26	38.5 (10)	61.5 (16)

By the same token, of those with no schooling at all, some 25 percent were married and can be considered illiterate. These observations may in part be due to the fact that prior to the Portuguese Revolution (1974) only four years of elementary education was required. Other reasons for the lack of education were distance to schools and the practice of using children as laborers in fishing activities. According to the President of the Junta, the perception among fishermen is that one does not need to be educated to be a fishermen and consequently without the support of parents the prospects for better educating their children remain slim. Similar conclusions were found in a study of Brazilian fishermen where the illiteracy rate was found to be almost 50 percent among those interviewed in 1984.[37]

Education by age groups reveals a somewhat different pattern (Table 5). The younger generation (14-24 years of age) shows a much higher propensity of having had 5-8 years of schooling than those over 25. This pattern may be

Table 5
Age Group 5
(Ranked by Years of Education)

Age	Sample Size	Years of Education				Average Years of Education
		0	1-3	4	5-8	
14-24	41	21.9	21.9	9.7	46.5	3.8
25-35	28	14.2	17.8	53.8	14.2	3.4
36-46	10	20.0	30.0	20.0	30.0	3.2
47+	21	66.6	19.2	14.2	—	1.1
Average Sample Size		29.0	21.0	24.0	26.0	

influenced by the government's mandate in the 1970's of making education up to the sixth grade mandatory. As age increases the proportion of fishermen with five or more years of education decreases. The same conditions seem to prevail when education is measured by the number of children fishermen have (Table 6). Those fishermen with fewer children have more education, and as their education decreased, the number of children in many cases increases. This pattern clearly revealed itself for fishermen with no schooling; more than half of them have more than five children.

Table 6
Number of Children
(Ranked by Years of Education)

Number of Children	Sample Size	Years of Education				Average Years of Education
		0	1-3	4	5-8	
0	31	19.3	29.0	12.9	38.8	3.7
1-3	25	24.0	24.0	20.0	32.0	3.3
4-6	23	30.4	8.7	43.5	17.4	2.9
7-15	21	47.6	19.0	23.8	9.6	2.1
Average Sample Size		29.0	21.0	24.0	26.0	

How many years each respondent has been a fishermen and how that relates to his educational background was also investigated during the survey. Most fishermen have been in this activity for the greater part of their lives and will continue to do so until retirement. The data indicates that most fishermen

grew up near the port and get involved in fishing related activities at an average age of 14, even though the laws dictate a minimum age of 16. Several fishermen had started their career at an even younger age (10-13 years of age). Most of the respondents in this category entered the fishing business during the 1930's and 1940's, when education was not an important factor in their lives, and many of their forefathers had joined the fleets at that same age. In terms of measuring the years of education against the years of being a fishermen no significant relationships were discovered (Table 7).

Table 7
Experience as Fishermen
(Ranked by Years of Education)

Years as a Fisherman	Sample Size	Years of Education				Average Years of Education
		0	1-3	4	5-8	
1-4	14	12.5	43.7	18.7	25.1	3.1
5-10	25	37.5	12.5	3.1	46.9	3.5
11-20	33	24.4	17.0	44.0	14.6	3.5
21+	28	45.4	27.3	18.1	9.2	1.6
Average Sample Size		32.0	22.0	23.0	23.0	

Education makes very little difference in the career of a fisherman since he either quits school at an early age or never goes back to school once he starts working on a vessel. For most artisanal fishermen, education beyond the sixth grade is not really necessary according to some of the respondents;

they get what they need to know during the early years of contact with experienced individuals.

Fisherman's Perception

In this section the survey data is analyzed as it pertains to the perception and attitude of fishermen toward changes in port operations and government assistance. Five questions were asked dealing with financial assistance, port improvements and changes in the auction system and dealer fees. These questions were given a value ranging from one to five where one was assigned the lowest priority and five the highest. In analyzing this data, respondents were classified into four age groups for the purpose of making a distinction between the younger independent fishermen and the older experienced generation. Furthermore, the older fishermen have grown up under the fascist regime while the younger generation is more in tune with a capital-oriented economy, hence a different perception can be expected between the two groups. Finally, the responses were interpreted according to the level of education which can have some effect on the answers given by individuals.

Of all the questions asked, those considering government subsidies and loans were first and foremost in the minds of fishermen. For instance, when asked about the need for winter loans, most of the fishermen in all age groups indicated this to be their highest priority (Table 8).

Table 8
Government Loans
(Classified by Age)

Age Groups	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
14-24	41	—	—	4.8	2.4	92.8	4.9
25-35	28	3.6	—	7.2	3.6	85.6	4.7
36-46	10	—	—	—	—	100.0	5.0
47+	21	4.7	4.7	—	9.6	81.0	4.6
Average Sample Size		2.0	2.0	4.0	4.0	88.0	

Among individual age categories the responses ranged from 80-100 percent in support for some financial assistance during the season when fishing is severely curtailed due to rough seas and poor weather conditions. In addition, many fishermen complained about the dangers of getting in and out of the harbor despite the improvements recently completed. More importantly, however, is the concern of missing a week and even months of fishing during the winter season and the real possibility of accidents at sea. In lieu of the fact that fishermen in Rabo de Peixe cannot expect to find any other employment during this season and, living in poverty, have no opportunity to save any resources for this lean period, the idea of a loan comes into even sharper focus. When compared by education fishermen were even more strongly supportive of winter loans (Table 9). For the total sample, 90 percent

Table 9
Winter Loans
(Classified by Education)

Years of Education	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
0	29	—	3.5	—	10.3	86.2	4.8
1-4	45	4.4	—	4.4	2.3	88.9	4.7
5-8	26	—	—	7.7	—	92.3	4.8
Average Sample Size		2.0	1.0	3.0	4.0	90.0	

gave this question the highest rank. Some individual responses further illustrate the intense feelings fishermen have regarding the need for winter loans.

"The government should create a fishermen fund in case of bad weather. In the winter we cannot go to sea -- there is no money."

"In the winter we cannot catch anything so we can't cover the cost of bait, salt and diesel; we run in the red."

"Sometimes in the winter when there is little fishing and the stocks are plenty, those who go to sea will all catch the same species, usually bluejack mackerel, so the prices are way down."

"The conditions of the winter season force me to temporarily move to the United States for that period."

The next question probed into the possibilities for assistance to the vessel owner to cover such items as additional gear, paint or a new engine. Diesel which is another significant operating cost is already subsidized by the government at a rate of 34 percent per liter.[38] If the average fishing trip requires approximately 50 liters at a cost of 4,400 escudos, the saving to the

vessel owner amounts to 1,400 escudos. By law, these subsidies must be subtracted from the operating costs, thereby passing on the savings to all crew members of the vessel. Nonetheless, fishermen in the survey felt that additional support should be made available to them; 63 percent of the total sample indicated a high priority for assistance to vessel owners. But a breakdown by age revealed that the younger generation seems to be more supportive of this effort than the older fishermen (Table 10). Conceivably, younger fishermen who are mainly crew members are led to believe that any assistance given to the vessel owner could benefit them if a vessel improves in efficiency or technology. Yet there were also quite a number of respondents who were rather undecided on this point of subsidies. For instance, some 50.0 percent of the respondents 56 years and older ranked subsidies number three, on the scale of one to five.

Table 10
Subsidies for Vessel Owners (Engine and Gear)
(Classified by Age)

Age Groups	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
14-24	41	—	4.8	4.8	—	90.4	4.7
25-35	28	3.6	14.3	28.6	—	53.5	3.8
36-46	10	—	—	50.0	10.0	40.0	3.9
47+	21	—	9.6	57.1	—	33.3	3.6
Average Sample Size		1.0	8.0	27.0	1.0	63.0	

Older crew members have indicated that based on their experience financial assistance for the purpose of obtaining a new engine only benefits the vessel owner who gets it at a 50.0 percent reduced price.[39] When considering their level of education, 63.0 percent of the fishermen answered by ranking this question number five and 27.0 percent ranked it number three. Thus, the general pattern by age and education is very similar (Table 11). Government subsidies, whatever form they may take, are always welcome by fishermen, as many conversations with them have indicated.

Table 11
Subsidies for Vessel Owners (Engine and Gear)
(Classified by Education)

Years of Education	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
0	29	—	3.6	41.3	—	55.1	4.0
1-4	45	2.3	11.1	22.2	2.2	62.2	4.1
5-8	26	—	7.7	19.2	—	73.1	4.3
Average Sample Size		1.0	8.0	27.0	1.0	63.0	

Another factor that loomed large in the minds of fishermen relates to the improvements of the infrastructure at the port of Rabo de Peixe (Table 12 and 13). Port improvements in general placed as number four in the ranking system for more than 88.0 percent of the respondents. Even though at the time this survey was conducted, the port was undergoing repair caused by winter storms; many physical improvements still need to be made. Several fishermen felt that

the expansion of the port made in the early 1980's was poorly designed and did not allow for the construction of piers.

Table 12
Physical Improvements of the Port
(Classified by Age)

Age Groups	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
14-24	41	—	—	2.4	90.3	7.3	4.0
25-35	28	—	—	—	85.7	14.3	4.1
36-46	10	—	—	10.0	90.0	—	3.9
47+	21	—	—	—	85.7	14.3	4.1
Average Sample Size		—	—	2.0	88.0	10.0	

Table 13
Physical Improvements of the Port
(Classified by Education)

Years of Education	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
0	29	—	—	—	89.7	10.3	4.1
1-4	45	—	—	2.2	86.7	11.1	3.9
5-8	26	—	—	3.8	88.4	7.8	4.0
Average Sample Size		—	—	2.0	88.0	10.0	

A common complaint is related to the current configuration of the port and the launching ramp (Rampa de Varagem) which is approximately 500 feet long and has an angle of nearly 30 degrees sloping into the sea. As such, the crew not only has to carry the fish up to the auction house but also must hoist the vessel up to the dry storage area with the aide of an outdated power winch. As one fisherman explained, "The port should be constructed with unloading docks; when we arrive we are very tired and yet still have to haul up the boats." Because of these conditions it is not surprising to find that most fishermen of all ages and levels of education strongly support any outside assistance regarding the physical improvements of the port. Recently, a new and enlarged auction house has been completed, giving fishermen more operating space, refrigeration and ice-making capacity.

Question number five addressed the auction system; what changes would fishermen like to see to improve the way fish were sold at Rabo de Peixe. Some of the most common complaints included auction fees fishermen have to pay, the fact that the auction operates without a fixed schedule, and if there is an over supply of one species, the last vessels of the day will be at a disadvantage. Among all ages and levels of education, this question ranked one and two on a one to five scale (Table 14 and 15). Ranks one and two were answered by more than 70.0 percent of the 100 fishermen interviewed. This indicates that evidently fishermen have a low priority for changes in the auction system. As to reasons for the opinions among fishermen may be their inadequate understanding or willingness to try new methods and procedures leading to greater efficiency and quality in fish handling and selling.

Table 14
Changes in the Auction System
(Classified by Age)

Age Groups	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
-14-24	41	9.8	68.3	17.0	4.9	—	2.1
25-35	28	32.2	53.6	7.1	7.1	—	1.9
36-46	10	50.0	20.0	30.0	—	—	1.8
47+	21	47.6	23.8	23.8	4.8	—	1.8
Average Sample Size		31.0	50.0	14.0	5.0	—	

Table 15
Changes in the Auction System
(Classified by Education)

Years of Education	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
0	29	34.5	37.9	27.6	—	—	1.9
1-4	45	24.2	53.3	15.8	6.7	—	2.0
5-8	26	26.9	57.7	7.7	7.7	—	2.0
Average Sample Size		28.0	50.0	17.0	5.0	—	

Somewhat related to the auction system is a question asked which addresses any change in the dealer's fee (Tables 16 and 17).

Table 16
Changes in Dealers Fee
(Classified by Age)

Age Groups	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
14-24	41	2.4	26.8	68.4	2.4	—	2.7
25-35	28	7.1	32.2	53.6	7.1	—	2.6
36-46	10	—	90.0	10.0	—	—	2.1
47+	21	14.3	61.9	19.0	—	4.8	2.1
Average Sample Size		6.0	42.0	48.0	3.0	1.0	

Table 17
Changes in Dealers Fee
(Classified by Education)

Years of Education	Sample Size	(Low) Ranking (High)					Average Rank
		1	2	3	4	5	
0	29	10.5	55.8	27.6	3.4	3.4	2.2
1-4	45	8.8	35.6	53.3	2.3	—	2.5
5-8	26	—	30.9	61.5	7.6	—	2.7
Average Sample Size		7.0	40.0	48.0	4.0	1.0	

At the present time, the fee structure set by Lotaçor is four percent of the gross sales for both fishermen and dealers. Many fishermen are of the opinion that dealers make more money than they themselves do, and yet don't experience the hardships fishermen do, therefore, their share in the marketing of fish should substantially be greater. Yet, according to the findings in the survey, respondents were somewhat divided on this issue. Some felt that the dealers are a necessary partner in the auction and fishermen need them, while others believe that they make all the money. A wide range of specific answers to the dealer's questions from the questionnaires of fishermen are quoted below:

"They (dealers) should not touch the fish." (10 answers)

"Dealers are all thieves." (6 answers)

"They (dealers) don't pay us enough, they control the prices." (3 answers)

"They (dealers) make more and always will." (3 answers)

"There are not enough government inspectors." (3 answers)

"The government should establish minimum prices for all species." (2 answers)

"They (dealers) treat us like they own us."

"All my life I have seen them (dealers) make the money."

"Fishermen should sell their own fish."

"They (dealers) control us but without them we die."

"They (dealers) do whatever they want with us."

"In the summer they (dealers) don't pay enough but in the winter it's enough."

"They (dealers) buy fish for 25 escudos and sell them for 100."

"We are all friends."

"We try to live together."

Fish Dealers

A small survey of 15 dealers was also conducted during this research project. It may be appropriate at this time to summarize the findings of this group. The majority of the dealers only sell locally to the neighborhoods or nearby villages on their tricycles; only two or three of them have the capacity to export. The average dealer had only 3 years of education but they have been in the fish market business for some 25 years. Thirteen of them took over or learned the business from their fathers, none of them have ever been a fishermen. As to their perception of the auction system, two-thirds of them felt the system is fair while the remainder believed taxes and other restrictions put a burden on their operation. An important inquiry was to find out how dealers feel about inspecting the fish, since fishermen are strictly against it. The overwhelming response was that dealers need to inspect the fish for freshness and damage. Individual reactions were as follows:

"The fishermen mix different sizes."

"The customer wants fresh fish."

"I can't buy fish without seeing it."

"Fishermen hide bad fish on the bottom."

"Would you buy fish without inspecting it?"

"Dealers get fined if fish do not meet inspection." (3 answers)

They defended their position by stating that the current laws and regulations only allow for a fixed pofit margin. More specifically, the law dictates that if a dealer pays more than 100 escudos per kilo of fish, he is allowed to make 35 escudos per kilo. If he pays less than 100 escudos per kilo, the profit margin is 20 escudos. This formula applies only to fish dealers who operate door to door, those selling to fish markets have to conform to a different price structure. They are getting only 25 escudos for any species bought for 100 escudos per kilo or over, and 10 escudos for fish they pay at a price of less than 100 escudos per kilo. As can be expected, fewer and fewer dealers cater to fish markets because of the low mark up and more frequent inspections. The money to be made by dealers today is by circumventing the Lotaçor formula in the following manner:

A possible scenario:

Three vessels enter the port on a particular day.

From vessel A - the dealer buys 100 kilos for 250 esc. per kilo;

From vessel B - the dealer buys 300 kilos for 100 esc. per kilo;

From vessel C - the dealer buys 400 kilos for 60 esc. per kilo.

According to the law, the dealer should pursue the following business transaction:

Amount of Fish Purchased	Purchase Price Per Kilo	Profit Allowed By Law	Retail Price	Gross Profit
100 kgs.	250 esc.	35 esc.	285 esc.	3500 esc.
300 kgs.	100 esc.	35 esc.	135 esc.	10500 esc.
400 kgs.	60 esc.	20 esc.	80 esc.	8000 esc.
				22000 esc.*

* From this amount taxes are to be paid. For bluejack mackerel it is 4 percent of 12.5 esc.; mackerel 4 percent of 17.5 esc.; tuna 4 percent of 25.0 esc. per kilo; for all other species 4 percent of the total purchase.[40]

In this case the dealer would make 22,000 esc. for the 800 kilos of fish he purchased from the auction that day. Given this relatively small profit margin, it is not surprising to observe dealers finding new ways to improve their income. Here is an example of how dealers, given the same amount of fish, can and do avoid the current price structure. This practice involves using the highest profit allowed by law for the entire 800 kilos purchased. In other words, the dealer is selling his fish for the day using the receipt of the 100 kgs. purchase and applies it to the other 700 kgs., as is shown below.

Amount of Fish Purchased	Purchase Price Per Kilo	Profit Allowed By Law	Retail Price	Gross Profit
100 kgs.	250 esc.	35 esc.	285 esc.	3500 esc.
300 kgs.	100 esc.	185 esc.	285 esc.	55500 esc.
400 kgs.	60 esc.	225 esc.	285 esc.	90000 esc.
				149000 esc.

The difference in gross profits between the two business transactions is 127.000 esc. or 677 percent of increased profit. Some dealers who operate out of several ports often take the highest receipt among them and thereby could further raise their income. To some extent, this situation is perpetuated by the local auction system which allows dealers to buy "X" number of containers for different prices from any number of vessels. The auction system must be restructured to a fixed opening time when all vessels must be present to eliminate the price variation as it currently exists.

Conclusion

The discussion in this chapter has provided some insights into the perception and socioeconomic situation of local fishermen in Rabo de Peixe. Their profile conforms closely to village society in a developing economy where

the population is characterized by large families, a high dependency ratio, low income and marginal education. The traditional beliefs of fishermen are still grounded in the assumption that many children and skills limited to their own occupation are the only ingredient for "making it" in Rabo de Peixe. In terms of government support, fishermen firmly believe that subsidies for vessel owners and the winter season can make a significant difference in improving their economic conditions. Physical improvements of port facilities are also given a high priority in order to reduce the daily hardships of handling vessels and the catch. By contrast, changes in the auction system and dealer fees are less important to the fishermen that were interviewed. The survey also brought out what might be termed a conflict between fishermen and dealers regarding the sale and handling of fish. Both sides provide reasonable arguments and it will take some fundamental changes in the auction system to rectify these conditions.

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

This thesis had several objectives: to assess the maritime economy of the Azores; to identify the socio-economic status of local fishermen; and, most importantly, to evaluate the operational and administrative aspects of the fish auction. Several auction systems were investigated in order to learn if anything can be transferred to improve the auction procedures in the islands.

Chapter II

First, a discussion was presented on the status of the fishery sector in the island economy and what improvements can be made to increase productivity. Official statistics indicate that since the revolution, fish production has steadily increased, but geographically the output by island is very uneven (Table 18). In terms of total 1988 landings by value, São Miguel, Faial, Terceira and Pico were the leading producers; by quantity São Miguel, Pico, Faial and São Jorge were the most important islands. A similar pattern is evident in the distribution of the number of ports and registered fishermen; the largest concentration are on São Miguel, Pico and Faial. This regional disparity may in part be attributed to the island's infrastructure, population size, fishing tradition and the proximity to fishing grounds. Any attempt by the government

TABLE 18

THE SHARE BY ISLAND OF THE THREE MAJOR SPECIES

COMPARED TO THE TOTAL LANDINGS OF ALL ISLANDS IN 1988

(In 1,000's of Escudos)

Species	São Miguel	Santa Maria	Terceira	Graciosa	São Jorge	Pico	Faial	Flores	Corvo
Bonito	80012	14533	91	937	22295	169371	83272	5205	669
Goraz	173452	7097	51553	3087	282	5296	100737	5626	3796
Chicharro	187720	2302	24198	2141	2658	6615	8768	314	5.1
(In 1,000's of Kilos)									
Bonito	2453	270	1.2	12.4	835	6671	3313	80.3	10.2
Chicharro	2638	17	257	12.9	20.6	45.2	83.8	3.5	.039
Tuna	353	28	——	5.3	95.6	278	116.8	13.9	.32

Source: Lotaçor, 1988
Based on Nominal Value of Tuna

to develop an island-wide fisheries policy must take into account the spatial nature of the industry.

Considering the three most predominant species in the Azorean fishery by value, they have in recent years been bonito, goraz and chicharro, respectively (Table 19). In 1988, some 13,600 tons of bonito, 890 tons of goraz and 3,000 tons of chicharro were caught. Even less comparable is the price per kilo which during the same year was approximately 80 esc. for bonito, 941 esc. for goraz and 76 esc. for chicharro.[41] It is clear from this data that much of the fishing effort is geared toward pelagic species and very little emphasis is placed on such valuable benthic species as goraz, cherne and abrotea. Furthermore, the industrial tuna fleet is made up of vessels built for a specific purpose, namely to catch various species of tuna and nothing else. A great variety of species, however, is caught by vessels of the artisanal fleet and with necessary improvements it should be able to expand its capability to not only catch larger quantities but also focus on the more underutilized species. Thus, from the point of view of increasing the fishing effort by species, the artisanal fishery is more adaptable to do so then the commercial sector.

Another characteristic of the island fishery is the economic contribution versus the share of financial support received between the artisanal and commercial sector of the industry. In 1988, the total fishery contributed 2.3 billion esc. (U.S. $15.2 million) to the island economy, of that about 60 percent is provided by the artisanal sector.[42] This share has been the result of labor intensive methods, minimal capital investments and inadequate infrastructure. As such it stands to reason that with only modest improvements in technology

TABLE 19

FISHERIES DISTRIBUTION BY ISLAND IN 1988

(Value, Quantity and Predominant Species)

	EASTERN ISLANDS				CENTRAL ISLANDS			WESTERN ISLANDS	
	São Miguel	Sta Maria	Terceira	Graciosa	São Jorge	Pico	Faial	Flores	Corvo
Value (Escudos)	1.279.634	34.896	243.129	27.681	65.755	225.102	358.409	39.116	5.627
Quanity (Kgs.)	8.202	367.640	841.500	105.900	1.103.190	7.164.450	4.124.650	229.140	28.350
Three Most Important Species by Value	Chicharro	Bonito	Goraz	Goraz	Bonito	Bonito	Goraz	Goraz	Goraz
	Goraz	Garoupa	Peixao	Abrotea	Abrotea	Tuna	Bonito	Pargo	Bonito
	Cheme	Tuna	Chicharro	Garoupa	Tuna	Chicharro	Cheme	Bonito	Pargo
Three Most Important Species by Quantity	Chicharro	Bonito	Chicharro	Abrotea	Bonito	Bonito	Bonito	Bonito	Goraz
	Bonito	Tuna	Agulha	Chicharro	Tuna	Tuna	Tuna	Congro	Bonito
	Gata	Garoupa	Imperador	Bonito	Chicharro	Gata	Boca Negra	Abrotea	Pargo

Source: Lotaçor, 1988
Based on Nominal Value of Tuna

and services, the artisanal fishery could be made even more productive. Currently, the commercial tuna fleet contributes less than half by value to the fishing industry, and yet government subsidies are almost entirely devoted to this sector. While this fishery is highly seasonal, it is also a capital-intensive activity with limited employment opportunities. The tuna fleet, because of its specialized equipment, is difficult and expensive to convert and diversify into other fisheries. At the same time as the fishing effort of tuna increases, the likelihood of overfishing in Azorean waters could become a reality, as it has already in other tuna regions in the world. Due to the seasonal and migratory nature of the tuna, the total catch already declined in 1982 and 1984.[43] On the other hand, by providing the artisanal fleet with electronic devices, larger vessels and other improvements, their efficiency could be dramatically improved. For example, the valuable "goraz" and "chicharro" fishery could be expanded while the crew per vessel could be reduced. As a result, the share per crew member would be increased and those no longer involved in fishing could be absorbed in other sectors of the economy.

Chapter III

Chapter III presents a comparative analysis of several auction systems for the purpose of identifying those aspects that can be transferred to the Azores. The recommendations to improve the auction in Rabo de Peixe are made in the sequence of a regular auction procedure from the time the catch arrives at the auction house to the time the purchase is made by the buyers. The author feels that the suggestions made are realistic and technically feasible

and, if implemented, will improve the efficiency and organization of local auction systems on the islands. It should also be noted that in a social democracy such as the one in the Azores, innovation and changes in technology may be more difficult to implement. By some measure, the comparison between New England and the Azores may not be fair becuase of the wide gap existing between the two places. Nevertheless, the features which have proven successful at New England auctions such as scheduling, auctioning all vessels at the same time or refrigeration, can be transferred over the short term regardless of the level of development in the Azores.

TIME OF ARRIVAL

New Bedford. All vessels have to post their hail on the board at 8:00 a.m.; the scallops auction begins at 7:00 a.m., and runs for 17 minutes. The fish auction lasts 22 minutes.

Boston. At the New England Fish Exchange, the auction officially opens at 6:30 a.m.

Portland. Portland's Fish Exchange is a display auction; therefore, it opens between 5:00 a.m. and 9:00 p.m., with the auction starting at 1:00 p.m. and ending when all fish are sold.

Rabo de Peixe. Two auctions take place, one in the morning and one in the afternoon, usually after most vessels have arrived. It is recommended that the two auctions -- one for bluejack mackerel at 5:00 a.m., and the other, for all other species, at 4:00 p.m., should follow a strict schedule. Also, all vessels should be auctioned off at the same time. The auction facility should

provide a board where fishermen can post their hail (estimated catch) and buyers can more efficiently plan their purchase. The specific timetable is necessary so that both dealers and fishermen can take full advantage of the transactions at the auction house. It is not uncommon to find that a vessel arrives after the auction is officially over and most dealers have left; therefore, the fishermen are subject to price gauging.

UNLOADING THE CATCH

New Bedford. Fish in this harbor are unloaded after the auction. The entire catch is usually bought by the dealer of processor so that the unloading takes place at the processing plant. Depending on the nature of the catch, a primary dealer (one who purchases the entire catch) will resell a portion of his catch to secondary dealers.

Boston. At the New England Fish Exchange the unloading proceeds according to the demand of purchase by each dealer and by alternating layers from top to bottom of the vessel. The dealer with the largest purchase share gets to unload his portion before any other buyer. The other dealers follow according to their share of the purchase. Regardless of the amount of purchase by any dealer, only 50 percent of what was bought will be unloaded for each dealer. This procedure of unloading assures that everyone shares in the quality of the product, since it generally deteriorates from top to bottom in the vessel.

Portland. Since this is a display auction, the unloading is done before the auction takes place. As the fish move from the vessel to the dock and to a sorting line, the fish is arranged by size and species and is immediately

stored in the refrigerated auction hall.

Rabo de Peixe. As vessels arrive at the port, the catch is immediately unloaded by hand into 30 kg. plastic containers and carried into the auction building. Unloading takes place as vessels arrive throughout the day, while the containers are stored in an unrefrigerated environment. In the survey, many fishermen complained about the hardships involved in transporting the fish up the steep ramp where the auction is located.

What is urgently needed in Rabo de Peixe is a permanent unloading dock and some type of a conveyor belt that would assist in the transportation of containers up the ramp leading to the auction house.

AUCTION BOARD AND BIDDING

New Bedford. The hail is posted on the board by species and weight per vessel. In addition, species are listed by size classes, thus forming the basis for the bidding system. The price for a particular size class is determined by the ascending bid method. At the ring of the bell, after 22 minutes the last dealer's name on the board gets the vessel's catch.

Boston: Unlike New Bedford, fish in Boston are sold by species -- not by the vessel -- and the time limit for the bidding is three minutes per specie. This auction also used the ascending bid method; however, not all the fish have to be sold through the auction. Part of the catch can be sold privately. This auction also accepts fish from other ports, as well as fish which is transported by truck.

Portland. This port has a display auction which gives buyers the

opportunity to inspect the fish. There is no auction board. Instead, dealers are provided with a printed version of the board indicating species, size (cull), seller's name, weight, and lot number (Appendix F). The display is arranged by lots, where containers are stacked into pallets totalling up to 900 pounds of fish. The bidding is done according to the ascending-bid method. The bidding starts at 1:00 p.m. and continues until everything is sold.

Rabo de Peixe. All artisanal fishing villages in the Azores use the display auction method, where the product is exhibited in individual containers identified by species and size per vessel. The bidding follows the descending method and proceeds by vessel in order of arrival at the port.

Since there is no display board and the bidding is restarted after each vessel is auctioned off, dealers have few options for a competitive advantage. At the same time, the descending-bid method is less favorable to fishermen since the price decreases dramatically if bidding continues for too long. In considering improvements for the Rabo de Peixe auction, the following suggestions are made.

First, the auction should acquire an auction board where such information as species, size, and weight by vessel are recorded. An example of a typical auction board is shown on Table 20.

Aside from this board an electronic device should be made available for dealers to avoid double or triple bidding on a particular price quoted by the auctioneer. This problem is very common in the bidding method used in Rabo de Peixe where the auctioneer is often forced to decide who was the first bidder.

TABLE 20

RABO DE PEIXE AUCTION BOARD - AN EXAMPLE

Date	Vessel Name →		São João		Santo Cristo		Santo Antonio		Horta		Maria	
Species	Cull	Size	Wt. kg.	Price (esc.)	Wt. kg.	Price (esc.)	Wt. kg.	Price (esc.)	Wt. kg.	Price (esc.)	Wt. kg.	Price (esc.)
Bluejack Mackerel	Large	+20 cm	400	150	500	151			600	152		
	Medium	19-15 cm	200	130			300	130	200	131	500	120
	Small	- 15 cm			200	92					400	89
	Mixed		200	30	50	50	100	50	30	25		
Atlantic Mackerel	Large	+15 cm			250	161	200	162	180	164	200	179
	Small	- 15 cm	200	120					100	120	50	119
	Mixed		150	110	180	109						
European Pilchard	Large	+15 cm			50	156						
	Small	- 15 cm					100	119	150	118	150	120
	Mixed		120	90	90	50			60	80	80	110
Kitefin Shark	Large	+1 m							100	200		
	Small	- 1 m	300	180	100	160	150	150	200	170	250	100
European Conger	Large	+1 m	50	300					250	301		
	Small	- 1 m			250	190	300	50				
	Mixed		60	65	50	70	80	69	40	54	50	80
Tope Shark	No Cull		200	100							400	202

In order for the above-mentioned innovations to work, the auction needs to operate on a strict time schedule. Since there are essentially two fisheries in Rabo de Peixe, the auction should operate at two different times of the day. In the morning (approximately 6:00 a.m.) the auction should focus on bluejack mackerel (Chicharro), a species that is traditionally a fresh fish consumed on the same day. For all other species, the auction should re-open in the afternoon (approximately 5:00) and stay open until all vessels posted on the board are auctioned off. Those vessels considered late arrivals should be accommodated during the first auction on the following day. It goes without saying that fishermen and dealers alike must acquire the necessary discipline in order to succeed in a more structured working environment. Furthermore, for those vessels which missed the auction, refrigeration must be available to store the catch until the next auction takes place.

THE ROLE OF THE CAPTAINS AND VESSEL OWNERS

New Bedford. The auction starts at 8:00 a.m., and for the next 15 minutes there is heavy bidding among primary dealers. At the ring of the bell, the captain must decide whether or not he wants to remain in and continue with the bidding. The auction continues until 8:22 a.m., at which point the price of each specie is determined and the sale is made. If the captain decides to withdraw from an auction, he must post "no sale" on the board between 8:15 and 8:17 a.m. He can return for another sale the next day or sell his fish privately outside the auction.

Boston. After a price has been determined by the auctioneer, a captain

or vessel owner at the Fish Exchange can "scratch" the sale if he is not satisfied with the price on the board. If a captain scratches more than three species, he is obligated to withdraw from the auction with his entire catch, but can return the next day if he so desires. There are also penalties involved if a captain scratches part of his catch; however, if he returns for the next auction, credit is issued for the scratched species.

Portland. As in most auctions, the captains in Portland also have the option of scratching their hail after the highest bid has been made. There are no penalties and they may or may not return the next day.

Rabo de Peixe. In this village auction the captain can refuse any bid when the auction price is too low for his catch. However, his options are few because of the lack of refrigeration; he cannot store the fish, and there are no other auction houses nearby. Furthermore, it is illegal in the Azores to sell fish outside the auction system.

Chapter IV

Chapter IV investigates some social and economic features of the fishermen in Rabo de Peixe and how they perceive changes in the fisheries brought about by the government. The survey indicated a population of largely married individuals with an average of nearly 5 children, many of whom are destined to follow their father's career. The educational level of the sample population reveals that two-thirds of younger fishermen had more years of education, while the older generation not only received less education collectively, but also in terms of years. Income data was not obtained through

the survey instrument because of several inherent difficulties in getting accurate information. The lay system, however, provides some indication as to how much a fishermen can expect to earn per fishing trip. This allocation system is further differentiated by such factors as the captain's share, the size of the crew and the quantity of fish caught.

An inquiry was also made about the attitude of fishermen regarding improvements in port facilities, financial support and changes in the auction system. There is general consensus among fishermen that governmental support, whatever the nature, is long overdue for the artisanal fishery sector. While several physical improvements have been made at the port of Rabo de Peixe, other issues such as unloading and refrigeration of fish are still of concern for many who use the local facilities. Lastly, a pressing issue addressed in this chapter is the ongoing conflict between fishermen and dealers regarding the handling and pricing of fish; each group makes rather convincing arguments, according to the results of the survey.

The auction system practiced in Rabo de Peixe and in ports of the other islands needs to be researched in depth by the regional government of the Azores. From the bidding system to the marketing process, no innovations have been introduced by Lotaçor since 1981 when the agency was created.

Postscript

This project has attempted to address some of the shortcomings with the local auction system. The findings were presented during the fisheries week

held annually in Horta on the island of Faial. The presentation generated a number of responses from government officials, scientists and fishermen concerning the sanitation practices, refrigeration and fish handling procedures at the Rabo de Peixe auction. The survey also pointed to the fact that fishermen and dealers interviewed were not satisfied with the bidding system or the marketing of the catch. The possibility of these people to make their opinions known to authorities is slim indeed since they are not sufficiently organized and educated to influence government decisions. In 1975 the Portuguese government requested technical assistance form FAO for the development of the artisanal fisheries in the Azores. The proposal included the creation of cooperatives, the improvement in handling and marketing of fish and the modernization of fishing harvest and gear (FAO, 1975). According to the former Secretary of Fisheries, Ezequiel Moreira da Silva, the recommendations made by FAO were never put into practice.[44]

The inability of FAO to provide financial support and the lack of local funding and technical skills contributed to the demise of the project. The Secretary was also aware of the problems with present auction system which apparently go back many years. But then as now the primary focus of the industry is to develop the commercial tuna fishery. It is a well-known fact that since Portugal is now a member of the European Economic Community, attention has focused almost exclusively on the tuna industry, thereby neglecting the artisanal fishermen and their problems. Much of the financial assistance coming from the EEC to the Azorean fishery is channeled into the commercial sector of the industry. This study has presented evidence that the artisanal

sector makes a significant economic contribution, it employs the majority of the island fishermen, it has inherited many serious development problems and these deserve greater attention from the central government than what it currently receives.

FOOTNOTES

[1]According to local history, when the first settlers arrived in the 16th century, a man caught a fish so big that he cut the tail off and hung it on a stick, thereafter, the name of the village became Rabo de Peixe (Fish Tail).

[2]Taveira Tomás, Projectos Urbanos e Socio Económicos, Análise Económica, Vol. 1 (Lisboa, Portugal: S.A.R.L. 1975), 26.

[3]Lotaçor, Pescado Descarregado nos Portos da Região Autónoma dos Açores 1985-1988, (Ponta Delgada: Serviço Açoriano de Lotas, 1989), 6.

[4]Ibid.

[5]Ibid.

[6]Salaya J.J., Osório L., Guedez T., Diagnosis de la Pesca Artesanal en el Area De Golfo Triste, Venezuela: Puerto Cabello, Tucacas, Chichiriviche y San Juan De Los Cayos, (Universidad Simon Bolivar Caracas Venezuela, 1985), 779.

[7]Lotaçor, Pescado Descarregado nos Portos da Região Autónoma dos Açores, 1985-1988, (Ponta Delgada: Serviço Açoriano de Lotas, 1989), 4.

[8]It should be noted that fisheries statistics do not separate landings caught by the commerical and artisanal sector. As such Santa Cruz and Ponta Delgada are considered ports of both sectors with emphasis on commerical fisheries. Tuna is the only species that is statistically listed in both sectors.

[9]Fernandes Luís, Artes de Pesca Artesanal nos Açores, (Secretaria Regional da Agricultura e Pescas, 1984),9.

[10]Ibid.

[11]Lotaçor, Pescado Descarregado nos Portos da Região Autónoma dos Açores, 1988, (Ponta Delgada: Serviço Açoriano de Lotas, 1989), 1.

[12]Costa António da, Pescas: Perspectivas de Desenvolvimento, Food and Agriculture Organization, Rome, 1975, 1-32.

[13]Pereira, João, A Safra do Atum nos Açores em 1983, 4a Semana das Pescas dos Açores, Horta, 1984, 119-142.

[14]Lotaçor, Pescado descarregado nos Portos da Região Autónoma dos Açores, 1988, Ponta Delgada: Serviço Açoriano de Lotas, 1989), 1.

[15]Costa, António da, Pescas: Perspectivas de Desenvolvimento, Food and Agriculture Organization, Rome 1975, 1-32.

[16]Lotaçor, Pescado Descarregado nos Portos da Região Autónoma dos Açores, 1988 (Ponta Delgada: Serviço Açoriano de Lotas, 1989). 1.

[17]Clarke Robert, MA "Open Boat Whaling in the Azores: The History and Present Methods of a Relic Industry," Discovery Reports, Vol. XXVI, (Cambridge University Press, 1954), 287.

[18]Hansen, Jens, Ploug "Azores Adventure," Salt Water Sportsman, April 1986, 80.

[19]Ibid, 80.

[20]Ibid, 83.

[21]Governo da Região Autónoma dos Açores Secretaria Regional do Comércio e Indústria, Azores Export Buyers Guide, 1987. 15-17.

[22]Secretaria da Agricultura e Pescas, Regulamento Geral de Organização e Funcionamento das Lotas do Serviço Açoreano de Lotas, E/P/ - Lotaçor (Diário da República, Portaria No. 84, 1983), 59.

[23]Regulamento Geral de Organizacão e funcionamento das Lotas do Serviço Açoriano de Lotas, E.P. - Lotaçor: Diário da República, I série, No. 42, 1983, 356-359.

[24]Martin J. Vincent, Auctions as an Alternative Method of Selling Fish in New England. M.A. Thesis in Marine Affairs, University of Rhode Island, 1981, 34.

[25]Chui literally translated means police, but in the context used here it means "stop."

[26]Interview with António Paulorão, Auctioneer, Rabo de Peixe Fish Auction, August 1988.

[27]Regulamento Geral de Organização e funcionamento das Lotas do Serviço Açoriano de Lotas, E.P. - Lotaçor: Diário da República, I série, No. 42, 1983, 356-359.

[28]Interview with Fernando Lima, Director of Lotaçor, August 1988.

[29]Holmsen Andreas, Remuneration Systems and Ownership Patterns in the Fishing Industry and Their Relation to Investment Decisions, (F.A.O. International Conference on Investment Fisheries, 1969), 1-14.

[30]Ibid.

[31]Krausse, Gerald and Teixeira Carlos "Portuguese and Azorean Fishermen in New Bedford," Maritimes, 1985, Vol. 29, No. 3.

[32]O'Malley, Jim. "Boston Auction: NE Market Center," Commercial Fisheries News: New England's Fishing Newspaper, (1681 Vol. 10, No. 3, November 1982), 25-26.

[33]Ibid,26.

[34]Ibid.

[35]Interview with Dennis Frappier, General Manager of Portland Fish Exchange, April 1989.

[36]Holmsen Andreas, Remuneration Systems and Ownership Patterns in the Fishing Industry and Their Relation to Investment Decisions, (F.A.O. International Conference on Investment Fisheries, 1969), 1-14.

[37]Moraes Maria, Heck Marilda, Oliveira Claudia, Oliveira Santos, Evaluacíon de la Problemática de la Pesca Artesanal en la Província de Bahía-Brazil, (Sudepe-Bahía, Salvador Bahía Brazil), 730.

[38]Interview with Fernando Lima, Director of Lotaçor, August 1988.

[39]Ibid.

[40]Secretaria da Agricultura e Pescas, Regulamento Geral de Organização e Funcionamento das Lotas do Serviço Açoreano de Lotas, E/P/ - Lotaçor (Diário da República, Portaria No. 84, 1983), 42. (According to Lotaçor, this is an average "nominal" fixed price on which taxes are based. It's not the market price.)

[41]Lotaçor, Pescado Descarregado nos Portos da Região Autónoma dos Açores, 1988, (Ponta Delgada: Serviço Açoriano de Lotas, 1989), 49.

[42]Based on the market price the contribution of the fishery is more likely to be close to $22.0 million and 60 percent of that is provided by the artisanal sector.

[43]Pereira, João, A Safra do Atum nos Açores em 1983, 4a Semana das Pescas dos Açores, Horta, 1984, 119-142.

[44]Interview with Ezequiel Moreira da Silva, Secretary of Fisheries, 1978-1980.

APPENDIX A

Fishermen Survey

_____
Date

1. **Personal Data:**

   Age_____ Married_____ Single_____

   Years of Education_____ # of Children_____

2. **Data on the Fishermen:**

   Number of years as fisherman . . . . . _____

   Was your father a fisherman . . . . . _____

   What is your position on the vessel . . _____

   Do you always fish with the same crew . _____

3. **Fishing Technology Data:**

   What is the size of your vessel . . . . _____

   What fishing method is most common . . . _____

   What species do you fish most often . . _____

   Percent of expenses - diesel _____ bait _____

   Rank items by priority (higher 1 - lowest 5)

   _____ Loan for living expenses in winter

   _____ Physical improvements of the port

   _____ Subsidies for gear and motor

   _____ Changes in the dealer tax

   _____ Changes in the auction system (tax)

4. **General Questions:**

   Are you satisfied with the present lay-system? _____

   What is your opinion about government assistance programs? _____

APPENDIX B

Dealers Survey

_____
Date

1. **Personal Data:**

   Years of Education_____ Age_____

2. **General Data:**

   Domestic _____ Exporter_____

   How many years have you been a dealer _____

   Have you been a fisherman before _____

   Is the auction system fair _____

   Explain _____

   _____

   Fishermen complain about inspection of the fish. Why?

   _____

   _____

   Other comments

   _____

   _____

APPENDIX C

Ports in the Azores: Quantities Captured in 1988

Ports	Islands	Quantities/kgs.
Doca*	S. Miguel	5.104.200
Madalena*	Pico	4.937.446
Santa Cruz*	Faial	4.117.031
S. Roque*	Pico	2.019.695
Velas	S. Jorge	827.600
Ribeira Quente	S. Miguel	771.669
Lagoa	S. Miguel	695.313
Rabo de Peixe	S. Miguel	619.967
Vila Franca do Campo	S. Miguel	543.180
S. Mateus	Terceira	445.269
Vila do Porto	Santa Maria	367.440
Água de Pau	S. Miguel	336.768
Praia da Vitoria	Terceira	243.840
Calheta	S. Jorge	233.880
Santa Cruz	Flores	132.486
Lages das Flores	Flores	72.490
S. João	Pico	62.263
Ribeira	Pico	58.438
Praia da Graciosa	Graciosa	54.788
Biscoitos	Terceira	54.921
Mosteiros	S. Miguel	54.239
Porto Pipas	Terceira	51.187
Folga	Graciosa	38.863
Porto Formoso	S. Miguel	34.839
Corvo	Corvo	28.353
Capelas	S. Miguel	25.397
Topo	S. Jorge	23.235
Porto Martins	Terceira	22.875
Calhau da Piedade	Pico	17.938
Manhenha	Pico	17.410
Urzelina	S. Jorge	16.611
Porto Judeu	Terceira	15.700
Lages do Pico	Pico	14.338
Faja Grande	Flores	12.943
Ponta Delgada	Flores	11.221
Monte Calhau	Pico	11.730

*Commercial Ports

Ports	Islands	Quantities/kgs.
Calheta do Nesquim	Pico	10.594
S. Caetano	Pico	9.181
Maia	S. Miguel	9.091
Santa Cruz	Graciosa	8.183
Vila Nova	Terceira	7.092
Castelo Branco	Faial	6.164
S. Mateus	Pico	5.118
Nordeste	S. Miguel	4.571
Carapacho	Graciosa	3.767
Povoacão	S. Miguel	2.789
Norte Grande	S. Jorge	1.872
Varadouro	Faial	1.300
Silveira	Terceira	666
Porto Afonso	Graciosa	336
Santo Amaro	Pico	219
Maia	Santa Maria	201
Salão	Faial	155
Ribeirinha	Faial	80

Source: Lotaçor, 1988

APPENDIX D

Landings in the Azores: Quantities and Values in 1988

Species	Quantity/kgs.	Value/Escudos 150 Escudos=$1.00(1990)
Abrotea (Forkbeard)	423.171	124.474.234.00
Anchova (Enchova)	14.278	2.312.439.00
Alfoncim (Alfonsino)	121.649	334.252.344.00
Atum (Tuna)	891.850	47.334.429.00
Badego (Combgrouper)	1.021	288.830.00
Besugo (Auxillary Seabream)	6.649	2.401.355.00
Bicuda (European Barracuda)	33.659	17.215.694.00
Boca Negra	439.471	111.814.015.00
Bodião	21.867	9.162.612.00
Boga (Bogue)	39.102	2.705.453.00
Bonito (Skipjack Tuna)	13.648.515	376.388.131.00
Cacão (Tope Shark)	33.796	2.663.179.00
Cantaro	56.223	22.625.474.00
Carapau (Palambeta)	19.932	5.227.428.00
Cavala (Atlantic Mackerel)	159.160	25.321.400.00
Cherne (Wreckfish)	191.127	197.084.781.00
Chicharro (Bluejack Mackerel)	3.078.873	234.725.772.00
Choupa	3.850	3.124.257.00
Congro (European Conger)	287.451	81.224.289.00
Dourado (Common Dolphin Fish)	3.731	550.675.00
Enchareu (Guelly Jack)	9.468	2.095.230.00
Escolar (Oil Fish)	1.490	200.567.00
Espadarte (Swordfish)	212.864	99.798.158.00
Garoupa (Red Grouper)	82.116	32.891.139.00
Goraz (Blackspot Seabream)	366.065	334.543.036.00
Imperador (Common Beryx)	102.868	47.668.858.00
Juliana	29.159	6.120.864.00
Lírio (Yellow Tail Amberjack)	9.725	2.357.946.00
Lixa Gata (Kitefin Shark)	548.892	19.337.610.00
Mero (Dusky Grouper)	83.260	49.919.699.00
Moreia (Mediterranean Moray)	66.710	18.680.382.00
Pargo (Common Seabream)	33.559	22.980.275.00

Species	Quantity/kgs.	Value/Escudos 150 Escudos=$1.00(1990)
Parguete (Seabream)	383	154.606.00
Peixão	251.439	106.761.982.00
Peixe Agulha (Needlefish)	497	59.059.00
Peixe Espada (Silver Scabbard Fish)	70.178	13.840.521.00
Peixe Galo (John Dory)	1.247	377.851.00
Peixe Rei (Rainbow Wrasse)	13.145	4.330.855.00
Pescada (European Hake)	17.747	165.261.00
Prombeta (Pompano)	2.510	1.396.296.00
Raia (Ray)	47.789	10.963.844.00
Rocaz	19.100	
Safio (European Small Conger)	125.452	25.111.118.00
Salema (Salema)	51.050	5.710.563.00
Salmonete (Striped Red Mullet)	1.005	582.411.00
Sardinha (European Pilchard)	67.459	9.860.843.00
Sargo (White Seabream)	33.583	10.212.871.00
Serra (Atlantic Bonito)	25.373	9.595.414.00
Tainha (Golden Mullet)	15.549	2.768.009.00
Veja (Parrot Fish)	8.685	1.730.544.00
Diversos N/Esp. (Others)	11.115	1.421.767.00
Crustaceos (Crustaceans)		
Carangueijo (Crab)	990	426.600.00
Cavaco	789	2.403.221.00
Craca (Acorn Barnacle)	2.325	478.792.00
Lagosta (Spiny Lobster)	6.336	14.002.969.00
Santola	511	653.045.00
Diversos N/Esp. (Others)	1.369	343.840.00
Moluscos (Molluscs)		
Lapa (Mussel)	8.375	2.000.147.00
Lula (Squid)	356.228	112.134.084.00
Polvo (Octopus)	5.147	2.670.851.00
Diversos N/Esp. (Others)	15	6.500.00
Total	**22.166.942**	**2.283.353.000.00**

Source: Lotaçor, 1988

APPENDIX E

Example of a Cull Sheet Used at the Portland and New Bedford Auction

Species	Cull	Size
Blackbacks	Large-mixed	Greater than 1 1/2 lbs
	Blackbacks	11" to 1 1/2 lbs
	Mixed	(<100 lbs) Not culled
Dabs	Large	Greater than 2 lbs.
	Medium	Greater than 1 1/4 - 2 lbs
	Small	Greater than 3/4 lb. to 1 1/4 lbs
		Peewee(>3/4 lb) 12" - 3/4 lb.
		Mixed (<100 lbs) Not culled >12"
Grey Sole	Large	Greater than 2 lbs
	Medium	Greater than 1 1/2 - 2 lbs
	Small	Greater than 3/4 lb - 1 1/2 lbs
		Peewee(>3/4 lb) 14" - 3/4 lb
		Mixed (<100 lbs) Not culled >14"
Yellow Tails	Large	Greater than 1 1/8 lbs
	Small	12" - 1 1/8 lbs
	Mixed	(<100 lbs) Not culled >12" Cod Large
	Market	Greater than 3 1/2 - 10 lbs
	Scrod	19" - 3 1/2 lbs
Haddock	Large	Greater than 3 lbs
	Scrod	19" - 3 lbs
Hake	Large	Greater than 4 lbs
	Small	Greater than 14" - 4 lbs
Halibut	>125	Greater than 125 lbs
	85-125	Greater than 85 - 25 lbs
	50-85	Greater than 50 - 85 lbs
	10-50	Greater than 10 - 50 lbs
	0-10	0 - 10 lbs
Pollock	Large	Greater than 8 lbs
	Pollock	19 " - 8 lbs
Whiting	King	Greater than 1 1/2 lbs
	Regular	1 1/2 lbs & less

Source: Portland Fish Exchange, August 1988

APPENDIX F

Example of the Auction Board for August 16, 1989
(Portland Fish Exchange)

Species	Date Consigned	Lot # Order	Seller Name	Weight
Monktails, Large	Aug. 15, 1989	719	Assunta Lee	20
Monktails, Large	Aug. 15, 1989	711	June C.	12
Monktails, Large	Aug. 16, 1989	987	Winters	88
Monktails, Small	Aug. 16, 1989	988	Winters	4
Monktails, Small	Aug. 16, 1989	642	Theresa & Allyson	344
Monktails, Small	Aug. 16, 1989	915	Jamie & Ashley	142
Cod, Market	Aug. 15, 1989	721	Assunta Lee	14
Cod, Market	Aug. 15, 1989	704	June C.	165
Cod, Market	Aug. 16, 1989	992	Winters	26
Cod, Scrod	Aug. 15, 1989	859	Amethyst	
Cod, Scrod	Aug. 16, 1989	993	Winters	18
Cod, Scrod	Aug. 16, 1989	635	Theresa & Allyson	288
Cod, Large	Aug. 15, 1989	1000	Assunta Lee	13
Cod, Large	Aug. 15, 1989	705	June C.	207
Cod, Large	Aug. 16, 1989	991	Winters	53
Pollock, Large	Aug. 15, 1989	868	Amethyst	535
Pollock, Large	Aug. 15, 1989	511	Dee Dee Mae	276
Pollock, Large	Aug. 15, 1989	960	Tori T	900
Grey Sole, Large	Aug. 15, 1989	502	Dee Dee Mae	130
Grey Sole, Large	Aug. 15, 1989	715	Assunta Lee	3
Grey Sole, Large	Aug. 16, 1989	984	Winters	9
Dabs, Large	Aug. 15, 1989	714	Assunta Lee	4
Dabs, Large	Aug. 16, 1989	983	Winters	59
Dabs, Large	Aug. 16, 1989	624	Theresa & Allyson	587
Hake, Large	Aug. 16, 1989	622	Theresa & Allyson	713
Hake, Large	Aug. 16, 1989	894	Jamie & Ashley	900
Hake, Large	Aug. 16, 1989	918	Jamie & Ashley	106
Haddock, Large	Aug. 16, 1989	631	Theresa & Allyson	361
Haddock, Large	Aug. 16, 1989	995	Fresh Catch	491
Haddock, Large	Aug. 16, 1989	745	Eagle Seafood	12
Haddock, Scrod	Aug. 16, 1989	632	Theresa & Allyson	22
Haddock, Scrod	Aug. 16, 1989	997	Fresh Catch	529
Haddock, Scrod	Aug. 16, 1989	746	Eagle Seafood	7
Redfish	Aug. 15, 1989	3911	Mazie A	11
Redfish	Aug. 15, 1989	971	Jerry & Joe	12
Redfish	Aug. 15, 1989	709	June C.	70

Total Sold on August 16, 1989: 47,980*

*Total Auction Weight

Source: Portland Fish Exchange

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